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04 October 2022

DFS DELIVERS A$1.9BN NPV CONFIRMING WORLD CLASS STEELPOORTDRIFT VANADIUM PROJECT

A$1.9Bn (US$1.212B)	A$1.4Bn (US$896M)	A$237M (US$ 152M)	42%
$NPV_{7.5\%}$ (post-tax)	Attributable NPV	Yearly Free Cashflows	IRR (post-tax)
27 months	**US$211M** (Au$ 329M) Includes Contingency	**US$3.24**	**US$9.50** (Deloitte forward mid-range)
Payback	Start up Capex	C3 Opex V_2O_5/lb	Price per V_2O_5/lb

*Values might slightly differ due to rounding. US$/AUD Exchange Rate 1/10/22

Cautionary Statement LR 5.16.4 *There is a low level of geological confidence associated with the inferred mineral resources and there is no certainty that further exploration work will result in the determination of indicated mineral resources or that the production target itself will be realised.*

Jurie Wessels (Exec. Chairman) commented: *"The robust and outstanding nature of the Steelpoortdrift Project has been confirmed following a rigorous process, which was conducted by independent world-class vanadium experts, all of whom are active in the South African vanadium space. We are also very pleased that the DFS validated our previous studies and that it returned financial numbers proximate to those previously attained despite an environment of peak inflation. Our headline numbers utilised the mid-range forward looking sales price for vanadium pentoxide flake based on tier 1 advice from a comprehensive Deloitte's market study and a 7.5 percent NPV discount factor which reflects our growing confidence in the project following the DFS study results.*

Vanadium Resources Limited (ASX.VR8)
ABN: 47 618 307 887
7/63 Shepperton Road, Victoria Park, WA 6100 Australia
08 6158 9990 • contact@VR8.global • www.VR8.global

To illustrate the world-class nature of the project and to present results that are consistent with our past work, we have included a sensitivity analysis and tables showing a like for like comparison between the DFS result to our PFS results. This reaffirms the quality of the work we conducted over the last three years, the intrinsic attributes of the deposit and its well-developed location. Importantly, the project remains buoyant in lowest quartile pricing environments and evinces healthy financial returns throughout a range of sensitivities, including elevated discount factors. This illustrates the potential of the project to outperform its competition when markets are favourable, remain resilient under distressed conditions, and to be well suited to attract favourable debt funding and competitive off-take arrangements, which will be our focus in the coming months up to a final investment decision."

Eugene Nel (CEO) commented: *"The Company is pleased to bring a successful DFS to the market that underpins all previous results reported. The highly professional independent project team involved with compiling this report, have done excellent design and planning work to reduce the impact of a highly challenging market environment in terms of inflationary pressures. This has been achieved through focussed value and efficiency engineering initiatives that have been implemented.*

With the majority of project costs, both in terms of opex as well as capex being procured locally, inflationary effects in these areas have been minimised to approximately 5% for both compared to the PFS, which maintains the Steelpoortdrift Project's status as one of the world's lowest cost producers to potentially come into production. It is our belief that the project outcomes deliver the values required to progress this project into construction phase and to become the next major Vanadium producer globally. We are excited to progress this project for the benefit of all stakeholders".

HIGHLIGHTS

- AACE Class 3 DFS (accuracy of -10 to +20%) reaffirms Steelpoortdrift's potential to be a world class, large scale and low-cost vanadium producer with competitive opex and capex metrics
- Project NPV:
  - 100% Ownership Post Tax $NPV_{7.5\%}$ **US$1.212B (A$1.9B)***
  - 73.95% Ownership Post Tax $NPV_{7.5\%}$ **US$896M (A$1.4B)***
- Financial Metrics:
  - Life of mine ("LOM") EBITDA: **US$5.2B***
  - Average Annual Free Cash Flow from Commencement: **US$152M***
  - IRR (post-tax): **42%**
  - OPEX (C3): **US$3.24/lb (current V_2O_5 Price Europe = US$7.20)**
  - Pre-Production CAPEX: **US$211M (includes contingency)**
  - Expansion Capex: US$188M planned during years 3-5 of operation and funded through free cash flow
  - Payback: **27 months**
- Financial model conducted on a 100% equity basis utilising a concentrator and the conventional salt roast leach ("**SRL**") process
- Cash Flows attributable only to V_2O_5 flake sales, excluding potential titanium dioxide concentrate production and other potential ore credits

*Values might slightly differ due to rounding. US$/AUD Exchange Rate 1/10/22

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- **Additional LOM of up to 67 years** readily available in the designed open pits within a low environmental and social impact inclusion zone
- **Life of Mineral Resource in open pit is +180 years** at current throughput rates
- 96% of 25 year LOM classified as Proven and Probable Ore Reserves. Exclusion of Inferred Mineral Resources decrease the $NPV_{7.5\%}$ marginally to US$1.14Bn and the IRR to 41%
- Pilot plant test work yielded an average global recovery (concentrator plus SRL plant recovery to final flake) of **82.4%**, with maximum potential global recoveries of **84.6%** achievable
- Final flake product grades are projected to be +98.0% V_2O_5 with the potential to produce a >99.0% V_2O_5 product through the conventional SRL process
- Sensitivity analysis was conducted and indicated a robust project at a range of downsides (break-even points) such as at flake prices up to **US$4.60/lb** or at an increase in Opex >150%
- Renewable energy solar power plant expected to reduce carbon emissions and carbon tax by 34%
- A number of initiatives have been identified during the DFS to further improve costs and processing efficiencies and also includes target drilling areas for further expanding the Mineral Resource

The comparison of the PFS results to the DFS results are presented as follows:

PARAMETER	UNIT	PFS RESULT (June 2021)*	DFS RESULT (Sept 2022)
LOM production target	Mt ROM	73.40	80.30
Average annual flake production	ktpa	17.70	19.40
Flake price	US$/lb	9.03	9.50
Construction Capex Phase 1	US$m	200	210
Construction Capex Phase 2	US$m	147	188
Opex	US$/lb	3.08	3.24
NPV	US$m	1,197	1,212
IRR	%	45	42

**Refer to ASX announcement of 22 June 2021: Steelpoortdrift PFS delivers superior results.*

VANADIUM RESOURCES LIMITED (ASX: VR8; DAX: TR3) ("VR8" or "THE COMPANY") is pleased to announce the completion of its independently prepared Definitive Feasibility Study ("DFS") on the 73.95% held Steelpoortdrift Project located in the Limpopo Province of South Africa (the "Steelpoortdrift Project"). The Steelpoortdrift Project involves the open pit mining of an initial 1.60Mtpa (Year 1-4) of vanadium ore at an average head grade of 0.83% V_2O_5, primary treatment of ROM through an on-site concentrator, secondary treatment of 0.72Mtpa of concentrate through a SRL plant and final sale of ~12ktpa vanadium ("V_2O_5") flake at a grade of greater than 98%. In Year 5, and for the remaining LOM, the mining rate will increase to 3.5Mtpa at an average head grade of 0.71% V_2O_5, with increased processing capacity almost doubling production rates of 1.25Mtpa concentrate and 21ktpa flake.

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1. Definitive Feasibility Study Summary

After the positive results obtained from the Scoping Study prepared in 2020 and the subsequent pre-feasibility study ("PFS") completed in 2021, VR8 initiated the DFS in January 2022 which has been completed on time and on budget. This DFS has assessed the technical and economic merits of mining the Steelpoortdrift Vanadium Project and provided Class 3 level estimates, as specified by the Association for the Advancement of Cost Engineering ("AACE"), which have an accuracy within the standard targeted range of -10% to +10%. This DFS has met the detail and accuracy required in 12 of the 15 disciplines, with the overall DFS completion estimated at 98% which is within requirements of AACE class 3.

The DFS has been based on the information available up to and including the date of publication (30 September 2022), which has concluded that the Steelpoortdrift Project is robust and economically feasible to produce a total of 484,000t of V_2O_5 flake over a 25 year period. The project has an $NPV_{7.5\%}$ of US$1.21Bn.

This DFS has also demonstrated that there is potential to further optimise project economics through the inclusion of focussed value engineering studies identified to reduce project costs, increase the LOM to over 100 years, increase earnings potential and further reduce environmental impacts.

The key financial results of the Phase 1 and Phase 2 DCF are presented in Table 1, using the following base assumptions:

- 25-year LOM;
- base currency: US$, with conversions from South African Rand ("ZAR") to US$ at ZAR15.50:US$1 (@ 2 October 2022 exchange rate ZAR18.09:US$1);
- base date: September 2022;
- overall capital contingency: 5.74%;
- >98% V_2O_5 flake price of US$9.50/lb (Deloitte Consulting (Pty) Limited ("Deloitte") Market Study – mid range flake price); and
- governmental royalty of 5% of gross revenue for refined metal.

Table 1: Key parameters and financial results

DESCRIPTION	UNIT	TOTAL LOM (25yrs)	ANNUAL AVERAGE	
			PHASE 1 (Yr 1-4)	PHASE 2 (Yr 5 - 25)
PRODUCTION				
Total ore tonnes	ROM kt	80,324	1,646	3,511
Total waste tonnes	ROM kt	70,539	456	3,272
Strip ratio	t / t	0.88	0.28	0.93
Average V_2O_5 grade	%	0.71%	0.83%	0.70%
Total V_2O_5 content	kt	573	14	25
Total concentrate produced	kt	29,083	724	1,247
Flake produced [1]	kt	484.0	10.7	21.0
REVENUE				
Revenue realisation for flake sold	kt	484	10	21
Gross revenue (incl payment delay)	000 US$	10,138,924	215,363	441,784
Marketing cost	000 US$	506,946	10,768	22,089
Royalties	000 US$	493,913	7,510	22,089
Net revenue	000 US$	9,138,065	197,085	397,606
OPERATING COSTS				
Total fixed opex	000 US$	874,334	20,170	37,793
Total variable opex	000 US$	2,582,563	53,152	112,855
Total opex	**000 US$**	**3,456,897**	**73,321**	**150,648**
Operating margin	**%**	**62%**	**59%**	**62%**

DESCRIPTION	UNIT	TOTAL LOM (25yrs)	TOTAL	
			PHASE 1 (Yr 1-4)	PHASE 2 (Yr 5 - 25)
CAPITAL COSTS				
Mining	000 US$	3,927	1,688	2,239
Concentrator	000 US$	61,164	30,582	30,582
SRL plant	000 US$	256,368	130,355	126,013
TSF	000 US$	27,946	14,915	13,031
Site overheads	000 US$	20,907	20,907	0
Total construction capex	**000 US$**	**370,313**	**198,447**	**171,866**
Total capitalised operating costs	000 US$	33,271	30,238	3,033
Total SIB capital	000 US$	54,931	0	54,931
Total contingency capital	000 US$	23,162	12,286	10,875
Total capex	**000 US$**	**481,677**	**240,971**	**240,705**
CASH FLOW				
Free cashflows before tax	000 US$	5,199,492	67,335	5,132,157
Change in working capital	000 US$	0	0	0
Unredeemed capital	000 US$	242,567	242,567	0
Corporate tax	000 US$	1,403,863	181,600	1,385,682
Free cashflows after tax	000 US$	3,795,629	49,154	3,746,474
Cumulative free cashflows after tax	**000 US$**	**3,795,629**	49,154	3,746,474
$NPV_{7.5\%}$	**000 US$**	**1,212,321**		
IRR	**%**	**42**		

Notes:

1: Average flake production for four years, including the first year of production build-up

2: Stay in Business Capital is also commonly referred to as Sustaining Capital

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2. Relevant information regarding DFS preparation

The successful result of this DFS and VR8's board approval will lead to the development of the Steelpoortdrift Project, once finance as defined by the DFS has been raised.

The DFS has fully covered the requirements of both the mine/concentrator site and the SRL site which comprise the Steelpoortdrift Project.

The DFS referred to in this announcement is based upon the Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 2012 Edition ("**JORC Code, 2012**") compliant Mineral Resource estimate, dated 30 April 2022, independently prepared by Sound Mining International (Pty) Limited's ("**Sound Mining's**") Competent Person ("**CP**"). The Mineral Resource estimate is described in detail in the latest Resource and Reserve estimate *(refer to ASX announcement of 4 October 2022: VR8 updates mineral resource and ore reserve statements for the Steelpoortdrift vanadium project*). The Phase 1 and Phase 2 LOM plan is based on 96% Measured and Indicated Mineral Resources. The 4% Inferred Resources included in the LOM plan is only mined from Year 5. An optimised pit was selected for the detailed mine design and LOM scheduling. The said mine design was based on the JORC Code, 2012 compliant Ore Reserve estimate, dated 31 August 2022, independently prepared by Sound Mining's CP.

The Class 3 capex and opex estimates used in the DFS were all obtained by the respective engineering firms from independently derived quotations in today's market for the major cost items.

The economic assessment used in DFS was prepared by Sound Mining. The economic assessment meets the requirements of a DFS in its level of accuracy of the input parameters and may be considered as the most accurate representation of the value of the Steelpoortdrift Project based upon information available as at 30 September 2022.

The pricing of the >98% V_2O_5 flake has been estimated by VR8 taking cognisance of independent market research by Deloitte Consulting (Pty) Limited ("Deloitte") and using their mid-range flake price.

All units used in the DFS are metric. All costs, revenues and the financial model parameters are reported in US$. For the purposes of the DFS costing, which was predominantly undertaken in ZAR, the currency conversion rate used is 1.00 US$: 15.50 ZAR (@ 2 October 2022 exchange rate ZAR18.09:US$1). The discount rate of 7.5% was selected by VR8 on the basis of other projects of a similar nature located across the African continent, advanced stage of the study and on other competitive peer vanadium companies at the same study level.

This DFS Report contains forward-looking statements based on the estimates made by its independent consultants and engineering firms. The statements are subject to a number of known and unknown risks, uncertainties and other factors that may cause actual results to differ materially from those anticipated in the forward-looking statements. Factors that could cause such differences include changes in world vanadium markets, equity markets, costs and supply of materials relevant to the project, and changes to regulations affecting them. Although VR8 believes the expectations reflected in these forward-looking statements to be reasonable, VR8 does not guarantee future results, levels of activity, performance or achievements.

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3. Steelpoortdrift Project

The 25 year Steelpoortdrift Project, located in the Limpopo Province of South Africa (Figure 1), comprises the open pit mining of titaniferous vanadium ore, primary treatment of ROM through an on-site concentrator and secondary treatment of concentrate through an SRL plant to produce a >98% V_2O_5 flake.

4. Corporate structure

VR8 is a public company listed on the ASX which holds a 73.95% share in South African registered, Vanadium Resources (Pty) Limited ("VanRes") (Figure 2). VanRes is the beneficial holder of the Steelpoortdrift Project and associated Mining Right. The balance of 26.05% is held by Broad Based Black Economic Empowerment ("BBBEE") partners namely, Steelpoortdrift Development Trust (representing the local community), Obeec (Pty) Limited and Math-Pin Trust.

5. Study contributors and site inspections

The DFS was prepared by independent consultants and engineering firms as presented in Table 2 which indicates their respective area of responsibility and site inspection dates.

Table 2: Key contributors and site inspections

COMPANY	AREA OF RESPONSIBILITY	DATE/S
Consulmet Metals (Pty) Limited	SRL plant	Aug-22
DRA Projects (Pty) Limited	PV plant	Mar 2022
Minopex Technical Advisory (Pty) Limited	Operational readiness	Nov 2021
Nurizon Consulting (Pty) Limited	Surface water	Mar 2022
	Near surface geotechnical studies	
	TSF design	
Red Kite Environmental Solutions (Pty) Limited and associated specialist consultants	Environmental baseline studies	Jan, Mar, Apr, May 2022
	Hydrogeology	
Sound Mining International (Pty) Limited	Geological modelling, Mineral Resource estimation	Feb 2021, Feb, Mar Aug 2022
	Geotechnical for mining	
	Open pit optimisation, mine design, scheduling, Ore Reserve estimation	
SPH Kundalila (Pty) Limited	Mining costing	Feb 2022
Tenement Mining (Pty) Limited	Compilation of DFS Report	Dec 2021, Feb 2022
UMS METS SA (Pty) Limited	Concentrator plant	Apr, Nov 2021

6. Steelpoortdrift Project site localities and access

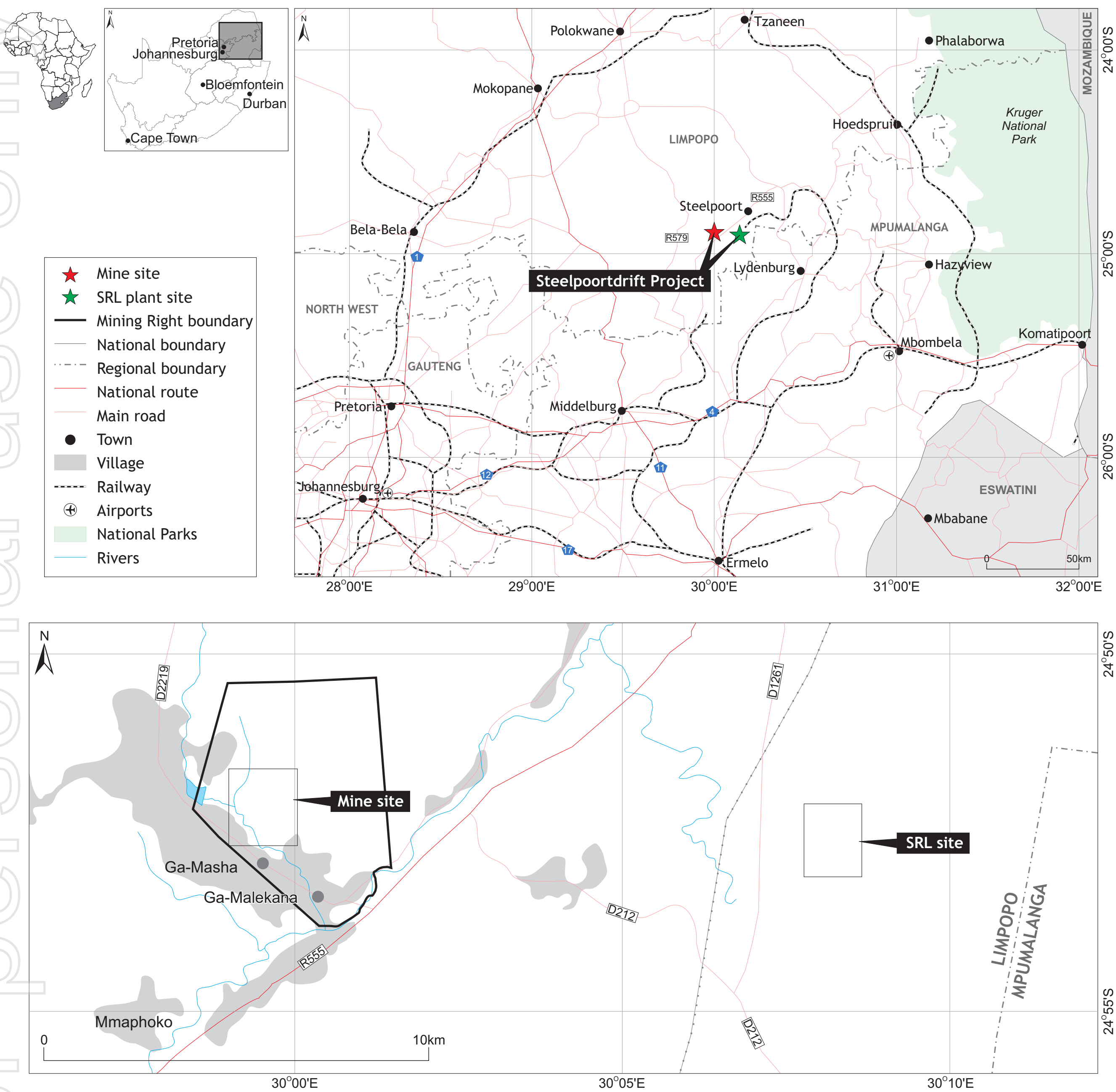
The Steelpoortdrift Project is located in Limpopo Province of South Africa, approximately 274km, by road, northeast of the capital of Pretoria (Figure 1). The Steelpoortdrift Project is divided into two separate surface localities namely, the mine / concentrator site, and the SRL / administration site, located approximately 23km apart by road towards the east (Figure 1). The DFS has fully covered the requirements relating to both sites.

Three main transport linkages are required to successfully operate the project, namely:

- delivery of consumables and construction material to the mine site and daily personnel access
- transport of the concentrate from the mine site to the SRL plant
- transport of the flake product to market.

Location of Steelpoortdrift Project

Figure 1



Corporate structure

Figure 2

Vanadium Resources Limited (VR8)
Australian Stock Exchange listed company

BEE partners
- 13.51% Steelpoortdrift Development Trust (Community)
- 7.95% Obeec (Pty) Limited
- 4.59% Math-Pin Trust

73.95% | 26.05%

Vanadium Resources (Pty) Limited (VanRes)
South African registered company

100%

Steelpoortdrift Project — Mining Right No. LP 30/5/2/2/1/10095 MR

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Primary access to the mine site is from the tarred R555 between Roossenekal and Steelpoort. Access to the site is over a single lane steel bridge over the Steelpoort River. A new culvert and associated roadway has been designed and costed to access site across the Shakwaneng River.

The SRL site is located within an industrial development area with tarred roads provided to the site gate by the industrial zone developers. The route to the SRL site for concentrate will be from the south via the tarred roads – a total distance of 23km. An alternative method of transport for the concentrate from the mine site to the SRL plant is being considered as part of the on going value engineering studies using a ropeway conveyor.

The final product, vanadium flake, will be packed into one tonne bulk bags and/or 200kg steel drums, and loaded into 20 or 40 foot containers. These containers will be placed onto trucks and transported, by road, to the ports of either Maputo, Mozambique (363km), or Durban, South Africa (737km) for export (Figure 1).

7. Legal tenure

A Mining Right (LP30/5/2/2/1/10095 MR) for vanadium, titanium and iron was awarded to VR8's South African subsidiary, VanRes in 2018 (Figure 1). The Mining Right, issued in 2018, is valid for 30 years and expires in September 2048.

The Steelpoortdrift Project holds an Environmental Management Programme ("EMPr") approved in terms of the Mineral and Petroleum Resources Development Act (Act No. 28 of 2002) ("MPRDA") and is therefore deemed approved in terms of the National Environmental Management Act (Act No. 107 of 1998) ("NEMA") and the National Environmental Management: Waste Act (Act no. 59 of 2008) ("NEMWA") which formed part of the 2014 Mining Right application. The Project also holds an approved Social and Labour Plan ("SLP") as part of the Mining Right.

The surface rights over the mine site rest with the local communities of the Masha and Malekane tribes. VR8 is finalising negotiations over a compensation model based on South African Rands per tonne (ZAR/t) of plant feed mined over tribal land as consideration for land use.

Surface rights over the SRL plant site (a portion of portion 15 of the farm Tweefontein 360 KT) are owned by Kadoma Investments (Pty) Limited ("Kadoma"). In August 2022, VanRes entered into an option agreement with the surface rights holders to acquire the 135ha industrial site for the SRL plant.

8. Regional infrastructure

The project is located in a well-established mining area with a number of current mining and beneficiation operations in the vicinity. Regional infrastructure is thus already well established and comprehensive.

8.1. Mine site infrastructure

Existing infrastructure located on the mine site is minimal and has been related to exploration and bulk sampling activities. Infrastructure to support the Steelpoortdrift Project to be constructed at the mine site will include the concentrator plant, mining support infrastructure including workshops and stores, an auxiliary laboratory, offices and training centre. The proposed site plan is presented in Figure 3.

8.2. Mining related

All mining will be undertaken from surface via conventional open pit mining methods. The LOM is 27 years. VR8 has elected a contractor approach to mining.

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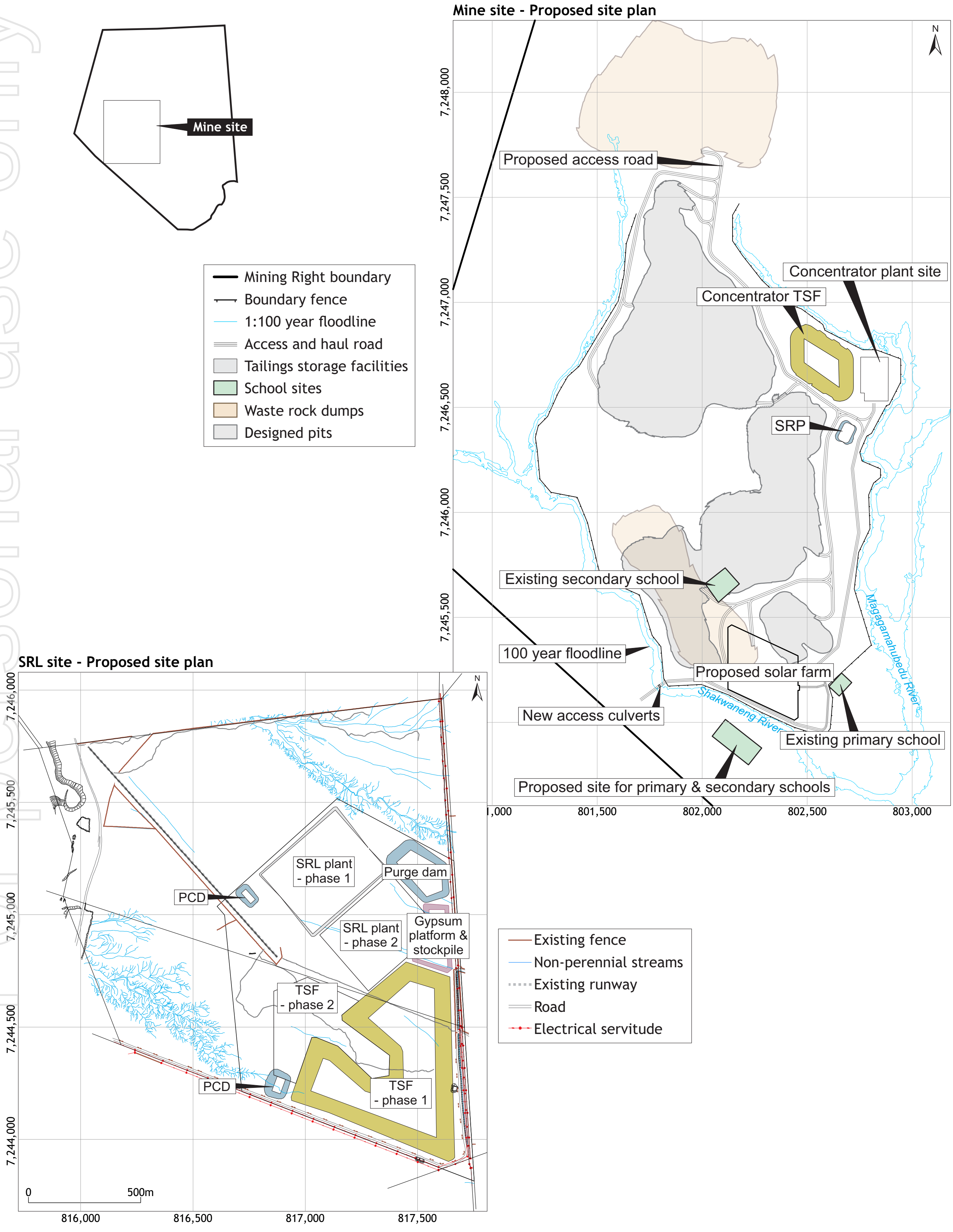
Mine and SRL site plans

Figure 3



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Three open pits have been designed within the low impact inclusion zone located between the Shakwaneng and Magagamahubedu rivers (Figure 3). Pit 1 is the northern most pit and contains an estimated 54.45Mt of ore at an average grade of 0.72% V_2O_5. Pit 2 is situated south of Pit 1 and contains an estimated 26.23Mt of ore at an average grade of 0.69% V_2O_5. Pit 3 is the southern most pit and contains an estimated 2.83Mt of ore at an average grade of 0.73% V_2O_5. Mining will commence in Pit 2, followed by Pit 1 and finally Pit 3.

Two waste rock dumps ("WRDs") will be used to store waste rock prior to rehabilitation back into the open pits. WRD 1 is located on the west of Pit 2, while WRD 2 is situated located north of Pit 1 (Figure 3). WRD 1 has a footprint of 23.3ha and has been designed with a capacity of 3.97Mm^3. WRD 2 has a footprint of 49.5ha and a capacity of 12.59Mm^3.

The mining equipment list and costing was provided by mining contractors SPH Kundalila (Pty) Limited ("SPH"). The equipment list was based upon the initial 1.6Mtpa production rate for Phase 1 (Yrs 1 – 4) and thereafter a rate of 3.5Mtpa (Yrs 5 – 27).

9. Concentrator Plant

The concentrator plant, consisting of a two-stage crushing circuit, ball milling, wet magnetic separation, dewatering, and re-grind magnetic separation areas, will be constructed at the mine site. The concentrator plant will receive ROM ore at a feed rate of 208tph to produce a concentrate of 2.08-2.16% V_2O_5.

Construction on the concentrator plant is scheduled to commence in Q2 2024 and will endure for 12 months. Post commissioning handover is scheduled for Q2 2025.

The concentrator tailings storage facility ("TSF") will be located at the mine site, to the west of the plant. The TSF is required to store the concentrator tailings, prior to them being returned to the mined out open pits as part of the rehabilitation process. As such, the TSF will store the first three years' tailings, amounting to 1.3Mm^3, until the end of the LOM. Should sufficient pit room become available prior to the end of the LOM, then tailings transfer may commence earlier.

9.1. Concentrator Water

Process water will be obtained from the existing De Hoop dam water distribution system which consists of water distribution lines and reservoirs situated on the mine site boundary. In addition, water will be recirculated and returned to the concentrator from pit dewatering, tailings and run off. The required process water top up for the concentrator is estimated at between 23,100 – 24,200m^3 per month depending on the season. Sufficient water is readily available.

9.2. Concentrator Power

Power for the mining operations and concentrator will be provided by a photo voltaic ("PV") solar farm to be located along the southern boundary of the mine site (Figure 3). This five Mega Watt ("MW") alternating current ("AC") , six Mega Watt peak ("MWp") direct current ("DC") solar PV plant will include a 1.0MW/4.0MWh vanadium redox flow ("VRFB") battery energy storage system ("BESS"). The total site load was estimated at 5,200kW steady state for 7,884hrs per annum ("pa") of which an essential load of 250kW would be required for 8,760hrpa. Backup power will be provided from a connection to South Africa's national power utility, ESKOM.

The estimated running load requirement for the concentrator plant is estimated at 6.555kW, with a maximum demand of 8.299kVA, and diversified absorbed load of 8.075kVA.

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9.3. Concentrator Workshops, Stores and Offices

Temporary project offices for the mining and concentrator personnel during the early construction period will be housed in the existing secondary school buildings located on the mine site following relocation of existing school. Permanent offices and administration facilities will be constructed as part of the mine and concentrator site development and the costs of these have been included in the concentrator capex costs.

Workshops, stores and offices relating to the concentrator operations will be constructed at the mine site. A satellite training facility and laboratory will also be constructed at the mine site.

10. SRL Plant

The SRL plant will be constructed at the SRL site (Figure 3) and will receive concentrate transported from the mine over a distance of approximately 23km. *Also refer to ASX announcement 19 August 2022: Acquisition of property to locate Salt Roast facility*.The SRL plant will treat concentrate to produce a vanadium flake at >98% V_2O_5.

Construction on the SRL plant will commence in Q1 2024 and is scheduled to take 18 months to construct. Post commissioning handover is scheduled for Q4 2025.

The Phase 1 TSF will be located to the southeast of the plant (Figure 3). It has been designed with a Class C barrier system and is planned to be operated as a dry stacking method, where the tailings material will be in the form of filtered cakes.

10.1. SRL Infrastructure

Current infrastructure present on the SRL site is limited to offices and warehouses relating to the Steelpoort Industrial Park. Water and power are, however, readily available on site as are access roads. Infrastructure to support the Steelpoortdrift Project to be constructed at the SRL site will include the SRL plant, administration offices, main laboratory and training centre.

10.2. SRL Water

The SRL site raw water will be obtained via the existing Kadoma connection point to the Olifants River Water Management scheme's situated next to Steelpoort Industrial Park, on the Lebalelo Water User Association pipeline, via a dedicated raw water pipeline. In addition, water will be recirculated and returned to the SRL from tailings and run off.The required process water top up for the SRL plant is estimated at between 19,500 – 24,000m^3 per month depending on the season. Sufficient water is readily available.

Kadoma (current owners of adjacent property) is planning to construct a water-treatment facility to serve the SRL site and existing mining operations in the area. The planned water-treatment facility is to consist of a water storage and purification system utilising water harvested from boreholes situated close by and water supplied via a pipeline located next to the Samancor-Tweefontein Mine from the Lebalelo-Olifants-River Water Scheme. This facility is expected to provide the SRL site with water resources at beneficial costs. In addition, Kadoma plans to recover grey and stormwater from the SRL site and other local mines to process in a purification plant located next to the SRL site.

10.3. SRL Power

Power for the SRL plant and offices will be obtained from ESKOM. However, Kadoma and its holding company (Freedom Property Fund), plans to develop a utility scale PV plant next to the SRL site to provide green energy to the surrounding mines and the SRL site. The PV plant is expected to be constructed in a modular fashion with uniquely designed fixed-tilt ground mount structures and will be commissioned in modules of 2MWp each.

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10.4. SRL Workshops, Stores and Offices

Workshops, stores and offices relating to the SRL operations will be constructed at the SRL site. The main training facility and main laboratory will also be constructed there, with the laboratory servicing the SRL plant and environmental, geological and grade control, metallurgical accounting, and sales and marketing samples.

11. Surveys

Detailed digital terrain mapping coverage is available for both the Mining Right and the SRL site. The Steelpoortdrift Project is using WGS 1984, UTM Zone 35 South for all site and mining surveying.

12. Geology and Mineralisation

The Steelpoortdrift Project is located within the Eastern Limb of the Bushveld Complex (Figure 4). The Bushveld Complex is the world's largest igneous intrusion and spans approximately 450km in width, 66,000km^2 in area and up to 9km in thickness. Stratigraphically, the Bushveld Complex is comprised of three intrusive suites, namely the Rustenburg Layered Suite ("RLS"), Rashoop Granophyre Suite and the Lebowa Granite Suite.

The RLS is host to mafic layers rich in platinum group elements ("PGEs"), nickel, copper, chromium and vanadium. The RLS is sub-divided into four stratigraphic zones namely the Upper Zone, Main Zone, Critical Zone and Lower Zone. Only the Upper Zone is of relevance to the Steelpoortdrift Project and comprises a layered succession of ferrogabbros, troctolites, anorthosites and magnetite layers.

The Bushveld Complex is a saucer-shaped, layered igneous intrusion emplaced as multiple injections or pulses of sulphide rich magma. Crystal fractionation of the magmas into immiscible silicates and sulphides formed the layering. The sulphides scavenged the PGEs and other metals from the melt and deposited them into the sulphide layers. The layers or reefs are typically gently dipping tabular bodies, which are identifiable across hundreds of kilometres.

Vanadium predominantly reports, but not only, to the magnetite layers, with controls on mineralisation being related to oxygen fugacity and temperature of the melt. Vanadium mineralisation occurs within four vanadium-bearing titano-magnetite-rich layers which are located at the base of the Upper Zone. A distinct anorthosite layer is present near the contact with the Main Zone. Previous work focussed on the various layered zones or units present namely; the Main Magnetite Layer Mineralised Zone ("MMLZ"), the Upper Mineralised Zone ("UMZ"), the Intermediate Mineralised Zone ("IMZ") and the Lower Mineralised Zone ("LMZ"), with average thicknesses of 5m, 19m, 14m and 12m, respectively (Figure 4). These units are each comprised of varying thicknesses magnetite, magnetite gabbro, gabbro and anorthosite.

The DFS work has moved away from categorising mineralisation by zones, as vanadium mineralisation is present to varying degrees, within all zones and across all mafic lithologies. Geological modelling, although recognising the main lithologies present, has focussed on vanadium grade as the parameter for defining material as being mineralised or waste. In this DFS, any material with a grade >0.45% V_2O_5 may be classed as mineralised material, with waste still carrying vanadium grade albeit below the economic cut off. Cross sections indicating lithology and grade along strike and down dip are presented in Figure 5.

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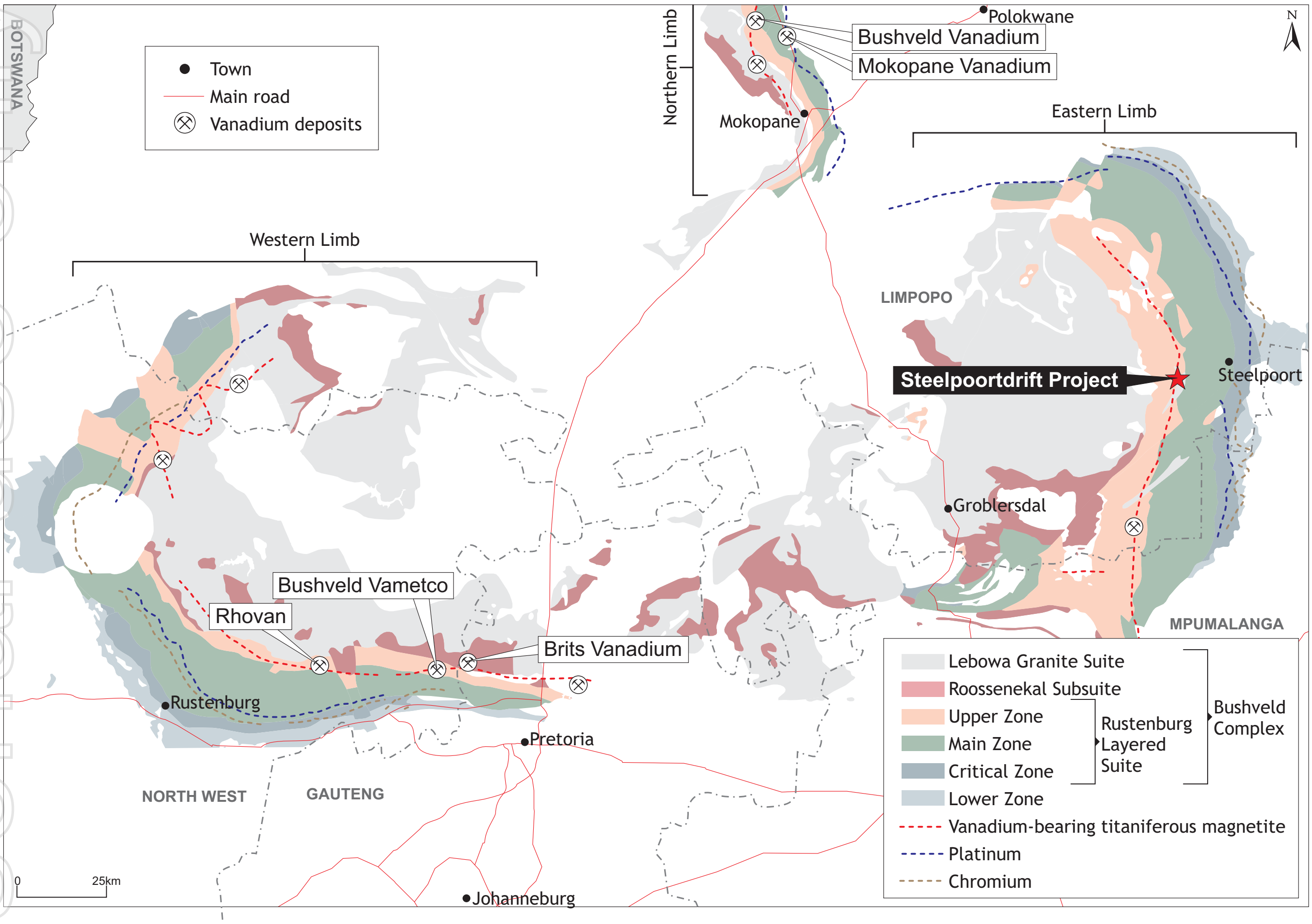
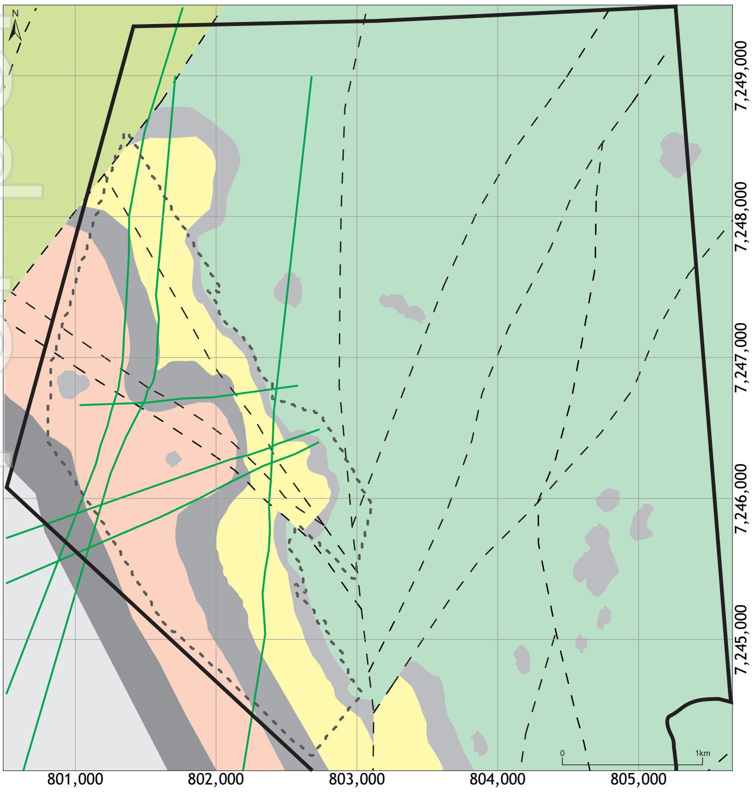
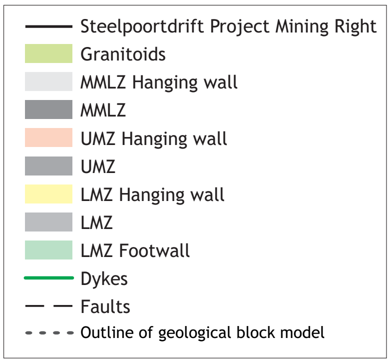
Regional and local geology

Figure 4







Source: GeoActiv (2022)
Coordinate system: WGS84 UTM35S

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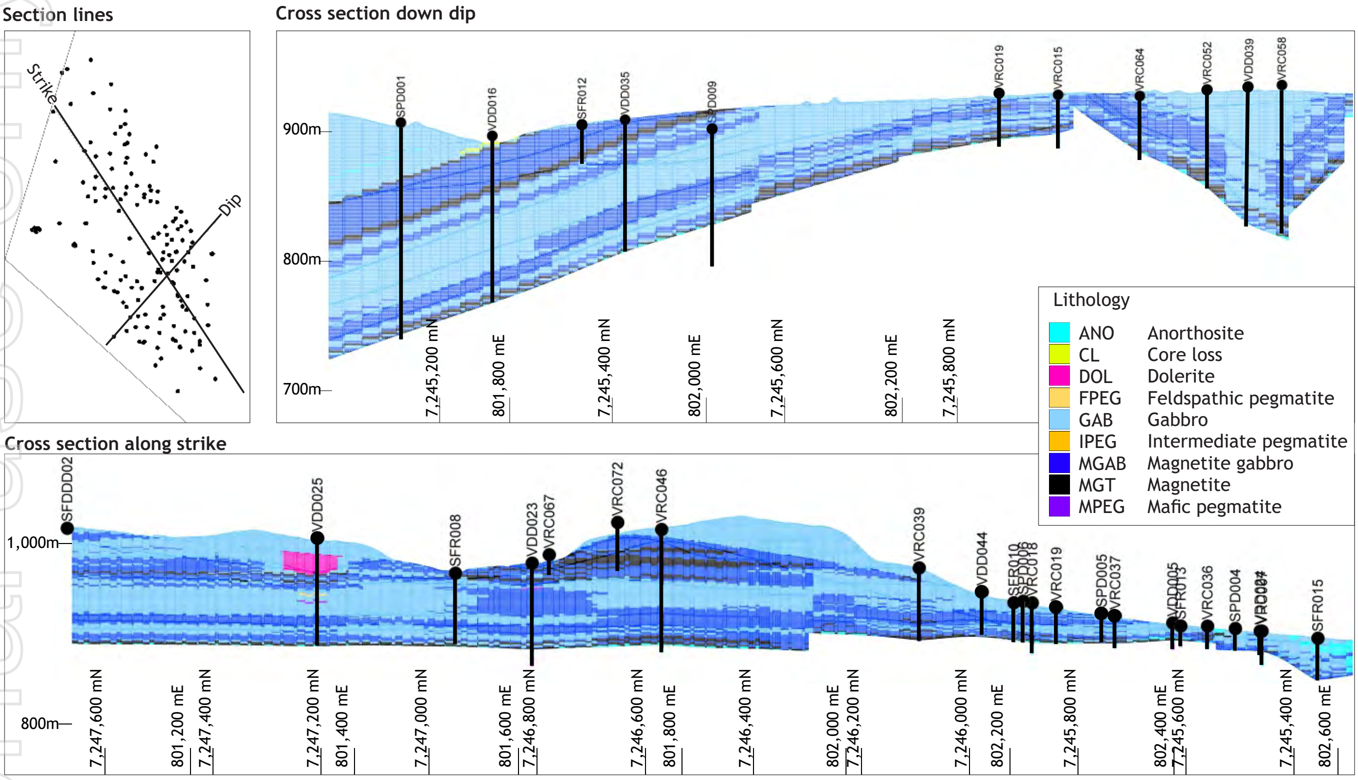
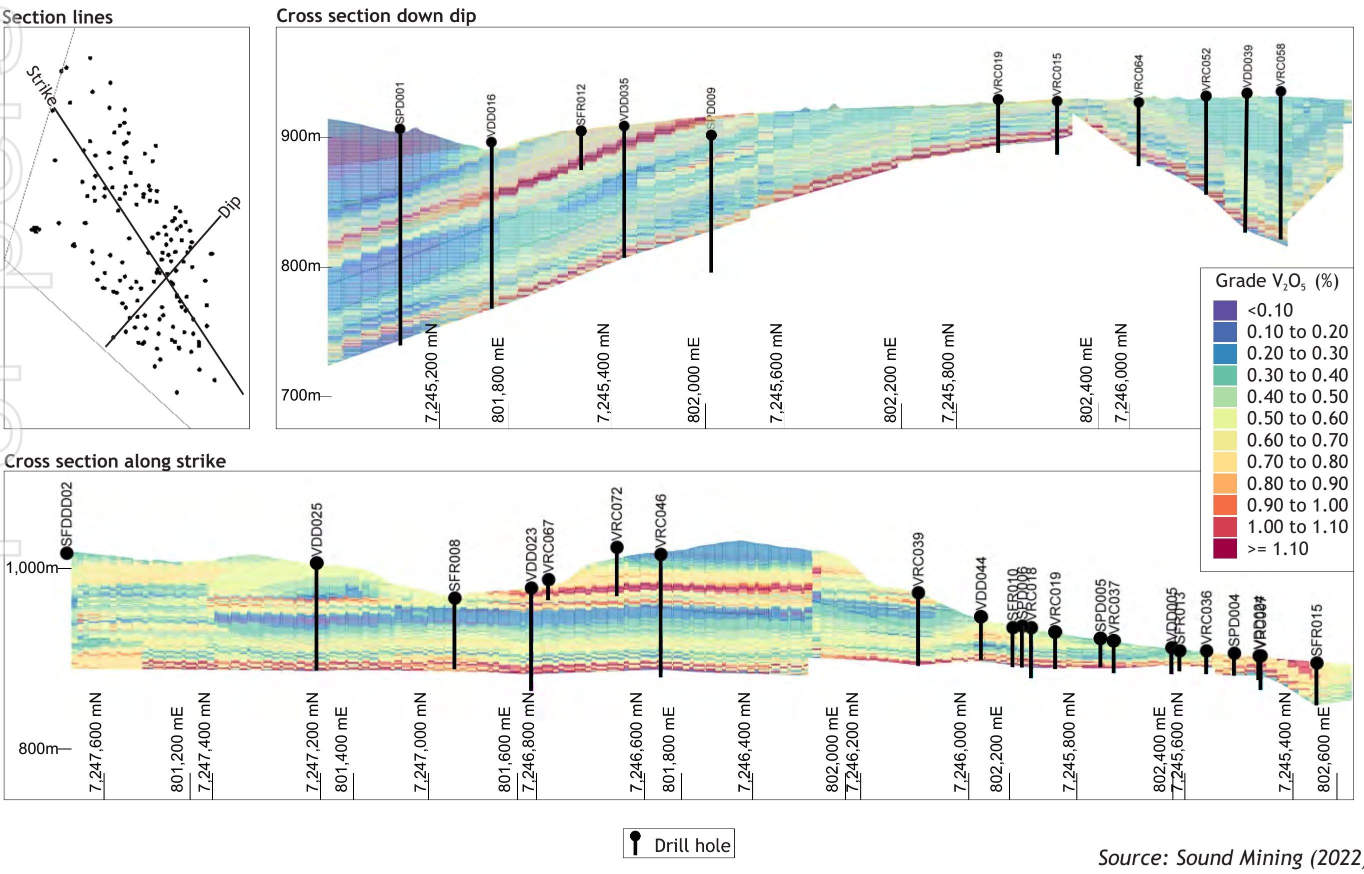
Cross sections through Steelpoortdrift Project indicating lithology and grade variations Figure 5

Typical cross sections through Steelpoortdrift Project indicating lithology



Cross sections indicating grade variations along strike and down dip



Source: Sound Mining (2022)

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13. Exploration

13.1. Historical exploration (1996-2006)

Historical exploration and drilling on the farm Steelpoortdrift 365 KT was undertaken for Vanadium Technology (Pty) Limited ("VanTech") and included the first detailed mapping, a handheld magnetometer geophysical survey, reconnaissance percussion drilling of seven drill holes (totalling 259m), and diamond core drilling of 16 drill holes (totalling 1,052m) (Figure 6).

These exploration activities established the first understanding of the mineralisation and stratigraphy at depth. This work also led to the recognition of the LMU and UMU of vanadium mineralisation and ultimately to the estimation of an Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves, 1996 Edition ("JORC Code, 1996") compliant Indicated Mineral Resources of 71Mt at a magnetite V_2O_5 grade of 2.16% over the Steelpoortdrift Project.

13.2. Previous exploration (2007-2017)

The previous exploration and drilling includes those activities undertaken from the time VanRes became involved in the project and obtained their prospecting right (1036/2007PR) in 2007. VanRes drilled 23 reverse circulation ("RC") drill holes (totalling 1,074m) and followed this up with two diamond core drill holes totalling 273m (Figure 6).

The exploration activities further defined the vanadium mineralisation associated with the LMU and UMU. These results, combined with the 1997 drilling, enabled Gemecs (Pty) Limited ("Gemecs") to estimate a South African Code for the Reporting of Exploration Results, Mineral Resources and Mineral Reserves, 2007 Edition ("SAMREC Code, 2007") compliant Inferred Mineral Resource of 513Mt at a whole rock V_2O_5 grade of 0.78% over the Steelpoortdrift Project.

13.3. Recent exploration (2018-2022)

Recent exploration includes the exploration and drilling activities undertaken on the Steelpoortdrift Project since VR8's involvement. The exploration included a remote sensing survey and helicopter and ground magnetic surveys. Drilling undertaken between 2018 and 2019 included 80 RC drill holes (totalling 4,304m), 34 diamond core drill holes (totalling 3,268m) and eight diamond core drill holes (totalling 482m) of the hills using helicopter access (Figure 6).

In addition, an interested party's lithological drilling results, relating to ten diamond core drill holes (totalling 850m), has also been added to the exploration database. In 2022, VanRes drilled 11 geotechnical diamond core drill holes totalling 1,049m, one of which was discarded.

All recent campaigns have implemented best practice protocols and have used the same logging and sampling procedures and responsible geologists. These best practises have ensured that the results may be considered accurate, reliable and verifiable and can be confidently used in the geological model and for the estimation of the current Mineral Resources and Ore Reserves. It is noted that, at the Steelpoortdrift Project, lithological boundaries are often gradational and that the exact boundary between one lithology and the next may be open to geological interpretation. However, these potential differences in interpretation do not impact the geological model, nor the Mineral Resource and Ore Reserve estimates, which have been based upon analytical results rather than lithology.

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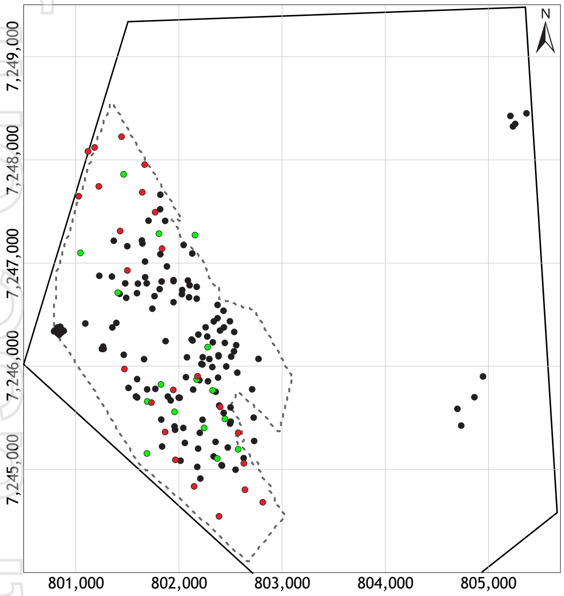
Location of exploration drill holes, geotechnical drilling and metallurgical samples

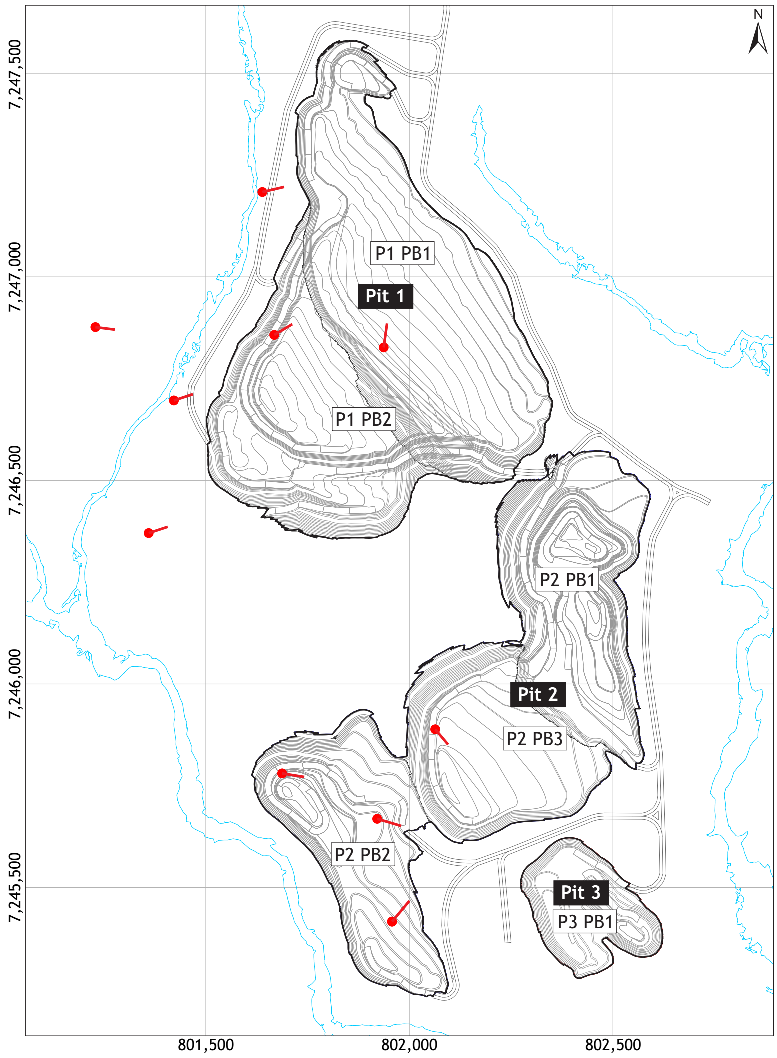
Figure 6

All exploration drill holes



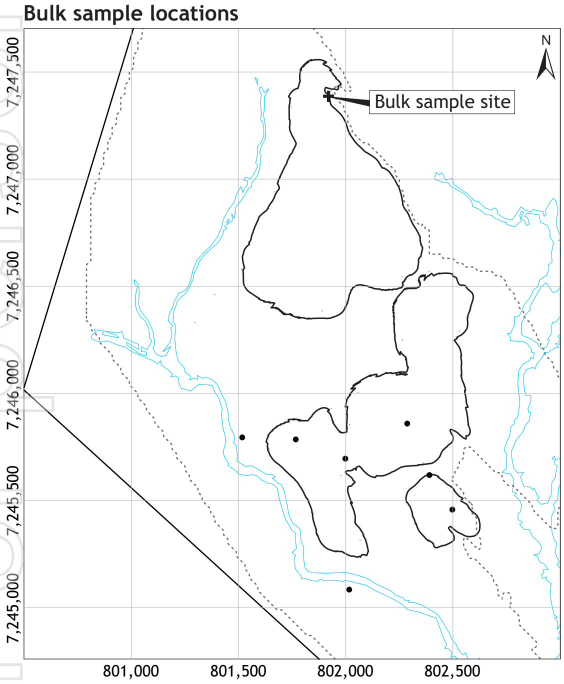
- Historical exploration
- Previous exploration
- Recent exploration
- Mining Right boundary
- Outline of geological block model

Geotechnical drilling in relation to designed open pits



- Geotechnical drill hole
- Drill hole trace
- 1:100yr floodline
- Open pit benches
- Haul roads
- P1 PB1 Pit 1, pushback 1

Bulk sample locations



- Drill holes metallurgical sample
- Bulk sample position (2022)
- Mineral Resource boundary
- Mining Right boundary
- 1:100yr floodline
- Designed pits

14. Geological modelling and results

Sound Mining was commissioned by VanRes undertake the geological modelling of the Steelpoortdrift Project and to prepare an independent Competent Persons' Report ("CPR") covering the vanadium Mineral Resource estimate in accordance with the JORC Code, 2012.

A total of 165 drill holes of the available 191 exploration drill holes were used in the geological modelling. The 26 excluded drill holes comprised seven RC holes (1996) which did not appear in the drill hole database, eight hill drill holes which did not form part to the orebody being modelled and the 11 geotechnical drill holes which were still underway at the time geological modelling was undertaken. The CP has reviewed the exploration database and was satisfied that the protocols and procedures reported for drilling, sample preparation, analytical procedures and quality of the assays returned by the laboratories comply with industry standards and best practices. The geology of the area is well understood.

Geological modelling was undertaken in Micromine 2021. With the exception of intrusive rock types and the footwall anorthosite, lithological contacts are gradational. Two high grade, magnetite rich zones were identified in the assay data where vanadium grades were found throughout the drill hole log. Taking this into consideration, the geological model was constructed using the footwall anorthosite as a hard boundary, applying the fault planes, and using the topography as the upper bounding surface. Cross sections through the geological model indicating lithology and grade variations are presented in Figure 5.

Review of the statistical and variography parameters for grade interpolation demonstrates a robust method for grade interpolation. This, coupled with the application of structure has produced a robust three-dimensional (3D) Mineral Resource model, from which the Mineral Resource estimate was derived.

15. Mineral Resource estimate

The Mineral Resource estimate, on which the DFS was based, was prepared by Sound Mining in accordance with the JORC Code, 2012. The reader is referred to *ASX announcement of 4 October 2022 : VR8 updates mineral resource and ore reserve statements for the Steelpoortdrift vanadium project* for the detailed description of the Mineral Resource estimate.

The current Mineral Resource estimate used the April 2022 geological model and associated drilling to December 2021. The third party drilling was included in the geological model for the first time.

The Mineral Resource estimate is tabulated in Table 3, and its location in relation to the drill holes is presented in Figure 7.

Table 3: Current Steelpoortdrift Project Mineral Resource estimate (30 April 2022) (JORC, 2012) (Inclusive of Ore Reserves)

MINERAL RESOURCE CATEGORY	VOLUME (m^3)	TONNAGE (t)	IN SITU GRADE (V_2O_5 %)	Fe_2O (%)	CONTAINED V_2O_5 (t)	TONNAGE BY CATEGORY (%)
Measured	43,768,739	145,450,000	0.72	22.47	1,045,000	**21.4%**
Indicated	98,751,338	327,290,000	0.70	22.80	2,291,000	**48.1%**
Inferred	63,413,420	207,370,000	0.68	22.90	1,403,000	**30.5%**
TOTAL / AVE	**205,933,497**	**680,110,000**	**0.70**	**22.76**	**4,739,000**	**100.0%**

Source: Sound Mining CPR (2022). Notes: V_2O_5 cut off >= 0.45%, tonnage rounded down to nearest 10,000t and metal content to nearest 1,000t.

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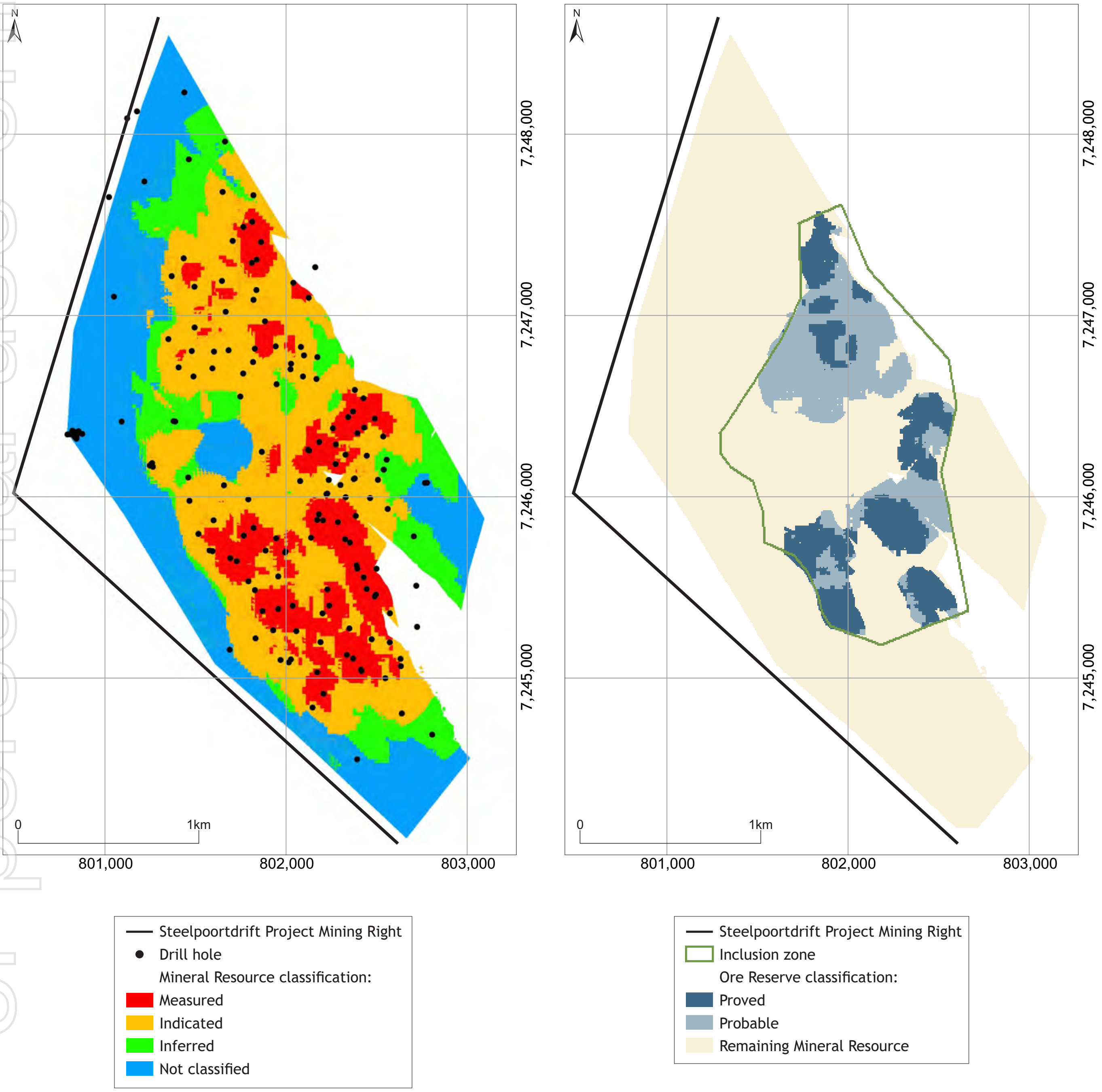
Location and classification of Mineral Resources and Ore Reserves

Figure 7

Location and classification of Mineral Resources

Location and classification of Ore Reserves



Source: SMI (2022)(PR/SMS/1131/21)

Coordinate system: WGS84 UTM35S

15.1. Difference between Mineral Resource estimates

The differences between the successive Mineral Resource estimates is presented in Table 4 and may be attributed to the following:

- smaller area with lower extrapolation distances used. The previous Mineral Resource extended beyond the Mining Right boundary whilst the current Mineral Resource has allowed a 50m boundary to the Mining Right Boundary;
- geological model based upon assay results not mineralised zones, which has resulted in a lower average grade and increase tonnage. Metallurgical testwork results indicate that vanadium can be recovered from gabbros because they are magnetic; and
- inclusion of additional drilling into the geological model allowing for an increase in the tonnage reporting to Measured Resources.

Table 4: Differences between successive Mineral Resources estimates

	30 JULY 2020			30 APRIL 2022			DIFFERENCE		
RESOURCE CATEGORY	TONNAGE (Mt)	IN SITU GRADE (V_2O_5 %)	CONT'D V_2O_5 (Mt)	TONNAGE (Mt)	IN SITU GRADE (V_2O_5 %)	CONT'D V_2O_5 (Mt)	TONNAGE (Mt)	IN SITU GRADE (V_2O_5 %)	CONT'D V_2O_5 (Mt)
Measured	92.29	0.77	0.71	145.45	0.72	1.05	**37%**	**-7%**	**32%**
Indicated	284.43	0.78	2.22	327.29	0.70	2.29	**13%**	**-11%**	**3%**
Inferred	285.32	0.77	2.20	207.37	0.68	1.40	**-38%**	**-14%**	**-57%**
TOTAL / AVE	**662.04**	**0.77**	**5.13**	**680.11**	**0.70**	**4.74**	**3%**	**-11%**	**-8%**

16. Geotechnical investigations for mining

The geotechnical analysis included the drilling of 10 geotechnical drill holes within and surrounding the designed pits (Figure 6). These drill holes provide 76% orientated cores on which detailed geotechnical logging was undertaken. This was followed by sampling and laboratory testwork on both fresh and weathered samples of the eight major rock types. The laboratory testwork provided the input data for geotechnical modelling and slope stability analysis. These results ultimately provided the recommendations for pit slope design. From the numerical modelling, the dimensions for a stable open pit slope were recommended as follows:

- berm width for fresh rock: 2m for design sector 1 and 2m for design sector 2
- berm width for weathered rock: 3m
- bench height for weathered and fresh rock: 5m
- bench face angle for weathered rock: 55°
- bench face angle for fresh rock: 88°

The result of the groundwater heads (porewater pressure), conducted by Delta-H Water Systems Modelling (Pty) Limited (“Delta H”), was used for the slope stability analysis. It assumed that water depressurisation will only occur naturally (without horizontal drains or wells) to a distance of up to approximately 10m to 30m behind the slope face for slope stability modelling.

On completion of the geotechnical investigation, no major geotechnical concerns were identified. The level of geotechnical study has met the design and accuracy levels required by a DFS.

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17. Open pit optimisation, mine design, scheduling and costing

Sound Mining was appointed by VanRes to carry out the pit optimisation, mine design and scheduling exercise on the Steelpoortdrift Project. Considering the nature of the orebody, the mining approach will be that of conventional open pit mining, at a 5m bench height, using drill rigs, excavators and haul trucks and an auxiliary mining fleet of dozers, graders, water trucks and utility vehicles.

17.1. Pit optimisation

The pit optimisation exercise was carried out within the low environmental and social impact inclusion zone which resulted in the identification of a suite of nested pit shells based upon the mine design criteria. The pit optimisation exercise assumed production rates of 1.6Mtpa ROM ore for the Phase 1 and 3.5Mtpa ROM ore for Phase 2 expansion, which was required to produce sufficient ore for at least 25 years.

A single pit shell (Pit 17) was selected and used as the basis for the mine design and scheduling exercise by Sound Mining. Although pits 18, 19 and 20 provided greater value add (Figure 8), their ROM tonnages far exceeded the 25 years remaining in the Mining Right. Pit 17, with 68% of the price factor, can produce approximately 83.4Mt ore.

17.2. Mine design and scheduling

The mine design criteria used by Sound Mining are presented in Table 5.

Table 5: Summary of mine design criteria

PARAMETER		UNITS	VALUE
FLAKE PRICE			
Exchange rate		US$/ZAR	15.50
V_2O_5 vanadium pentoxide flake 98%		US$/lb flake	9.00
		US$/t flake	19,841.58
SELLING COST			
Royalty		%	2.00
Marketing costs at 5% of revenue		%	5.00
General fixed costs (US$0.50/lb V_2O_5 produced)		US$/t flake	1,102.31
TOTAL SELLING COST (excluding flake hauling)		**US$/t flake**	**2,416.26**
Flake hauling distance (SRL site to port)		km	576
Flake hauling cost		US$/t flake/km	0.10
		US$/t flake	59.83
TOTAL SELLING COST (including flake hauling)		**US$/t flake**	**2,476.09**
PROCESSING COSTS			
Plant feed - steady state		Mtpa	3.20
Concentrator operation cost		US$/t ore	5.75
Concentrate hauling distance (Plant to SRL*)		km	24.00
Concentrate hauling cost		US$/t concentrate/km	0.10
		US$/t concentrate	2.49
SRL cost		US$/t concentrate	129.14
Recovery	Concentrator	%	98.00
	SRL	%	84.40
	Payability	%	82.72
Mass Yield	IMZ	%	(Grade × 0.96)/(1.97/100)
	UMZ	%	(Grade × 0.96)/(1.84/100)
	LMZ	%	(Grade × 0.96)/(2.13/100)
MINING COST			

PARAMETER		UNITS	VALUE
Mining fixed cost		US$/t ore	7.37
Mining variable cost		US$/t waste	1.92
		US$/t ore	2.16
Incremental bench cost		US$/5m bench/t waste	0.01
		US$/5m bench/t ore	0.01
MINING FACTORS *			
Planned mining losses and mining dilution		%	As per regularised model
Geological losses		%	5.00
Mining dilution		%	3.00
Mining loss		%	3.00
PIT GEOMETRY			
Slope angle	Topsoil – weathered	°	40.00
	Ore and fresh waste	°	55.00
Bench height		m	5.00

Source: Sound Mining (2022)(PR/SMS/1131/21). Notes: * - Dilution and mining recovery only represent unplanned dilution and recovery.

The result was three discrete open pits (Pit 1, 2 and 3) to be mined in a series of six pushbacks (Figure 6, Figure 9). The mine schedule comprised a total of 83.46Mt of ore at an average head grade of 0.71% V_2O_5 with an average strip ratio of 0.88t/t. Only Indicated and Measured material are planned to be mined for the first four years. Inferred material comprises 4% of the total LOM and will only be mined in Year 5. Graphs of total rock movement and strip ratio for the LOM are presented in Figure 10, along with the tonnages by Mineral Resource category and average grade.

17.3. Costing

The earthmoving equipment list and associated capital cost was provided by mining contractor, SPH Kundalila (Pty) Limited ("SPH"). The total capex was estimated at US$11.383m for Phase 1, with an additional US$30.239m required to scale up to the Phase 2 production rates. The mining operating costs were also provided by SPH for the LOM and amounted to a dry rate of US$7.68/bank cubic metre ("bcm") or US$2.33/t or a wet rate of US$9.59/bcm or US$2.90/t.

These costs were obtained from a single mining contractor in the current market and are deemed to be within the -10% to + 20% limit required for a Class 3 estimate.

18. Metallurgical testwork

18.1. Previous metallurgical testwork (2019-2020)

Two phases of metallurgical testwork were undertaken during the Scoping Study in 2019/2020 on drill hole samples (Figure 6) with the aim of demonstrating that the Steelpoortdrift Project ores were amenable to vanadium recovery using concentration and the established SRL method for extracting vanadium. The first phase of testwork was focussed on maximising the V_2O_5 grade into concentrate using a simple beneficiation process. The second phase focussed on testing the amenability of the Steelpoortdrift Project concentrate, produced during Phase 1, to the established SRL method for extracting vanadium.

The Phase 1 testwork successfully yielded a concentrate grading over 2.1% V_2O_5 at V_2O_5 recoveries ranging from 95% to 97%. Various circuit options were trialled with best results being achieved from a further re-milling stage followed by a final "cleaning" pass by wet low intensity magnetic separators ("WLIMS").

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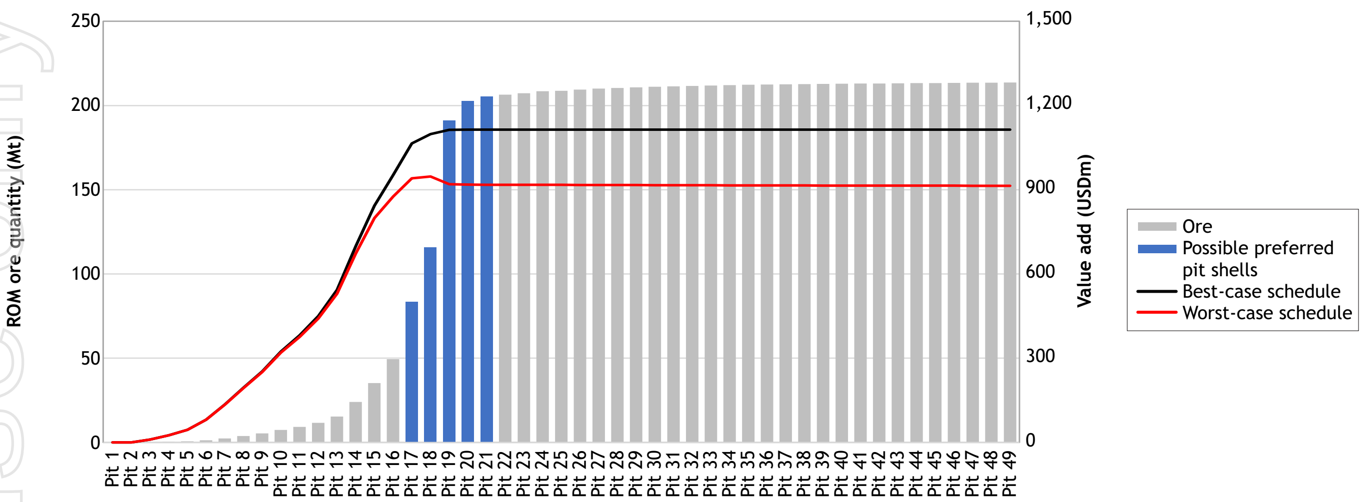
Graph of pit optimisation results

Figure 8

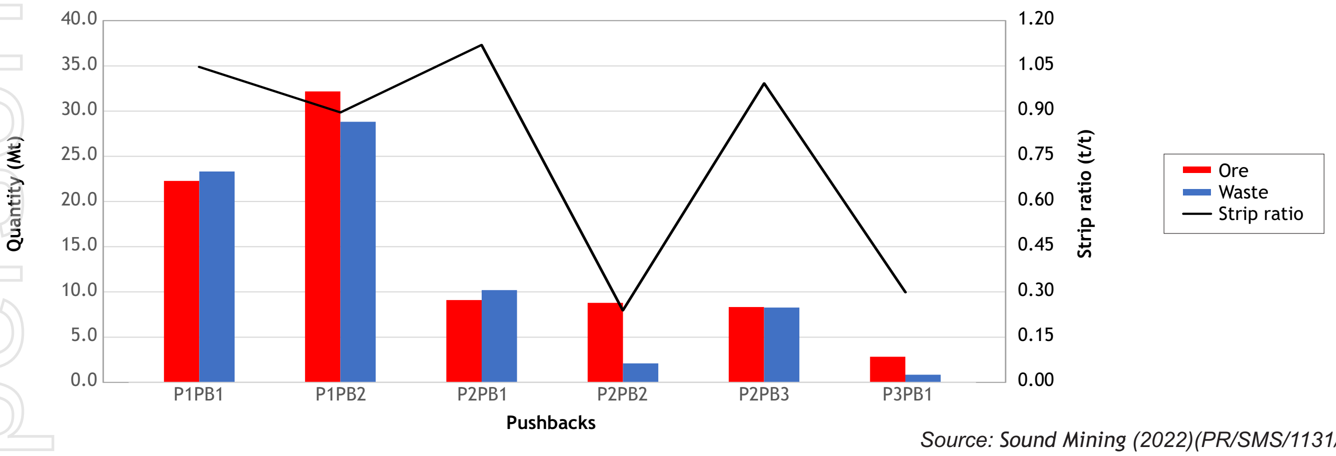


Source: Sound Mining (2022)(PR/SMS/1131/21)

Graphs of designed pits and pushbacks

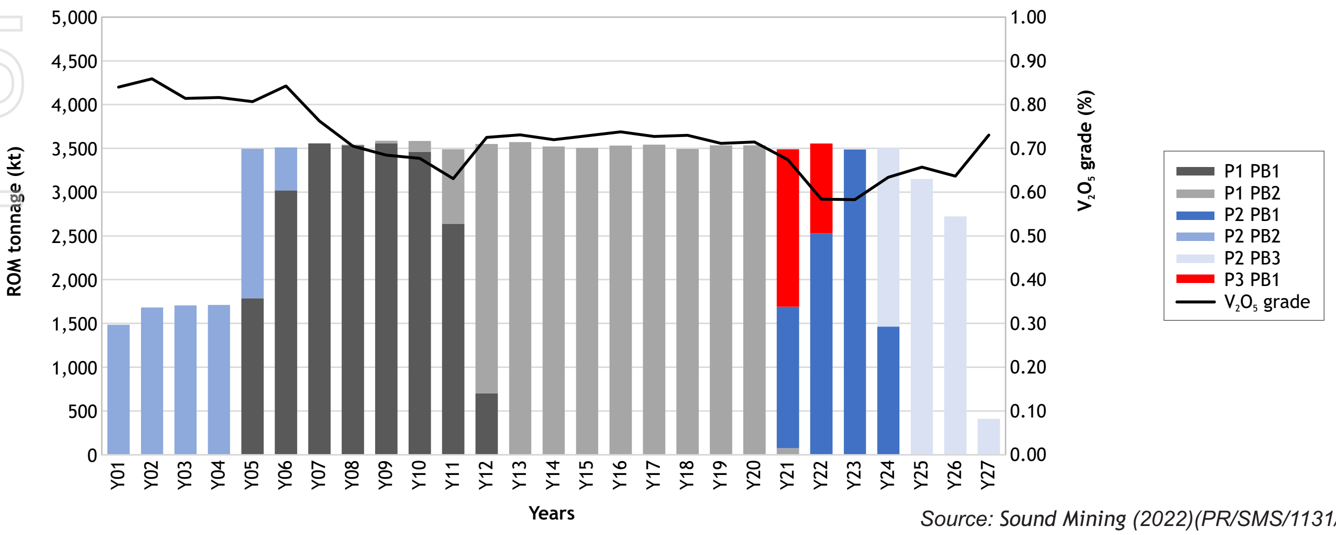
Figure 9

Graph of quantity and strip ratio per pushback



Source: Sound Mining (2022)(PR/SMS/1131/21)

Graph of pushback timing

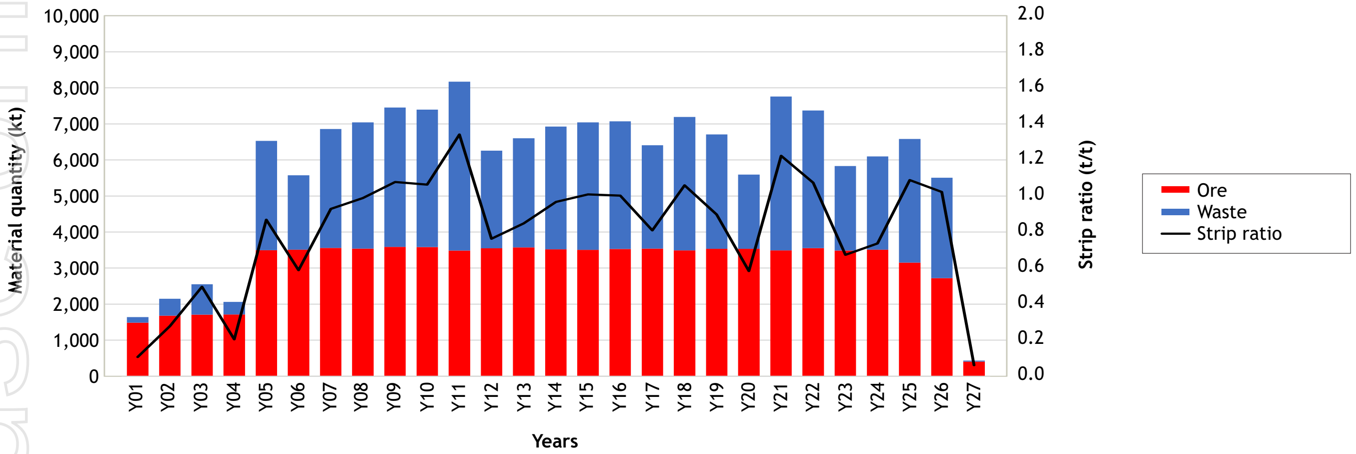


Source: Sound Mining (2022)(PR/SMS/1131/21)

Graphs of LOM schedule

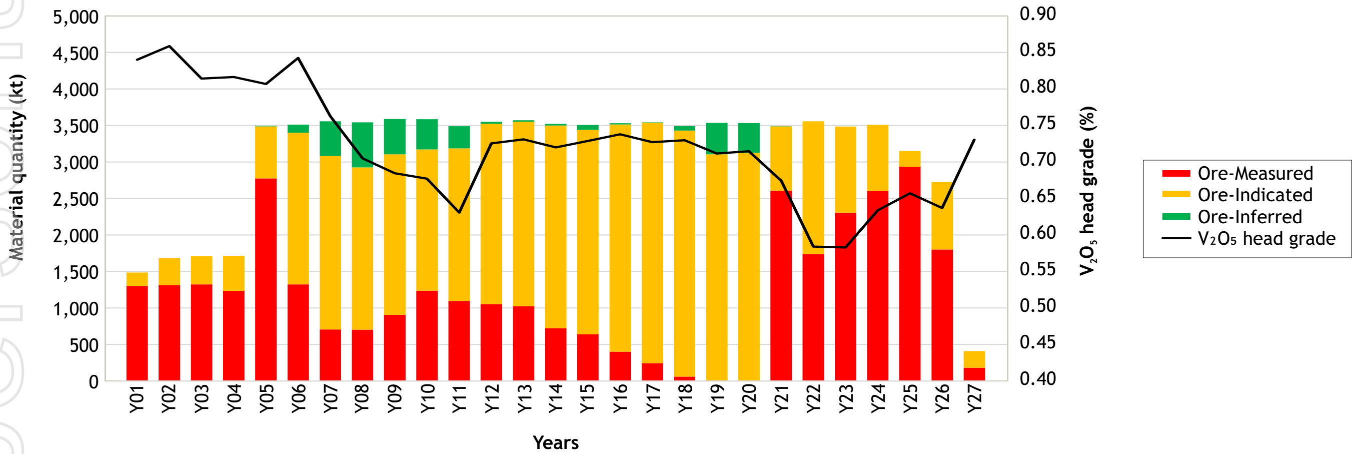
Figure 10

Graph of total rock movement and strip ratio



Source: Sound Mining (2022)(PR/SMS/1131/21)

Mineral Resource categories with average head grade



Source: Sound Mining (2022)(PR/SMS/1131/21)

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Based upon a recovery in the magnetic separation circuit of 96.5% and at a SRL recovery of 82.5% the initial testwork indicated overall project recoveries of 79.6% which was used for the PFS.

18.2. Recent metallurgical testwork (2022)

During the first quarter of 2022, pilot plant metallurgical testwork was carried out on a bulk sample with the aim of testing milling, magnetic separation, salt roast and residue characteristics of ore to be mined within the first five years. A 1.5-2.0t subsample was generated from the excavated fresh ore located in the region of mine production within the first five years (Figure 6, Figure 9).

The reader should note that, historically, the geological modelling, Mineral Resource estimation and subsequent mine planning were done on the basis of mineralised zones i.e., LMZ, UMZ, etc. Since vanadium mineralisation occurs across all these zones and within the various mafic lithologies present, the DFS geological modelling undertaken during the DFS was based on grade (V_2O_5 content). Since lithological contacts are mainly gradational, using grade as the determining factor eliminated any potential differences in geological interpretation.

Consequently, mined material and process plant feed are no longer classified according to the historical zonal approach. For the purpose of the DFS metallurgical testwork, the mineralised material was thus considered as a single package to be mined and processed. All testwork was conducted on this basis and the bulk sample was therefore considered representative of the total mined package to be processed.

The results of the previous metallurgical testwork, undertaken as part of Scoping Study and PFS, determined that V_2O_5 recovery was independent of process plant feed grades. Thus, irrespective of the feed grade processed, a constant V_2O_5 recovery into concentrate and eventually into flake, was achieved. The grade would only effect mass yields to concentrate and subsequently concentrate transport requirements. The lack of correlation was attributed to the mineralogy of the orebody whereby V_2O_5 exclusively occurs inside the titano-magnetite spinel matrices. This effect was observed in Davis tube tests conducted during exploration drilling campaigns.

Based on the outcomes of the DFS pilot test campaigns, an average global recovery (concentrator plus SRL recovery to final flake) of 82.4% can be expected with maximum potential global recoveries of 84.6% achievable.

Final flake product grades are projected to be >98.0% V_2O_5 with the potential to produce up to 99.4% purity products through the conventional salt roast process.

19. Concentrator plant process metallurgy and plant design

As part of the DFS, engineering firm UMS METS SA (Pty) Limited ("UMS METS"), was contracted by VanRes to carry out the concentrator plant design and costing for the Steelpoortdrift Project.

19.1. Concentrator design

The plant comprises primary crushing, secondary crushing, milling and magnetic separation to produce a concentrate. The process block flow diagram for the concentrator is presented in Figure 11.

The design was based upon the following:

- total feed rate = 1,606,505tpa;
- feed grade = 0.98% V_2O_5;
- final product = 722,066tpa;
- final product grade = 2.08-2.16% V_2O_5;

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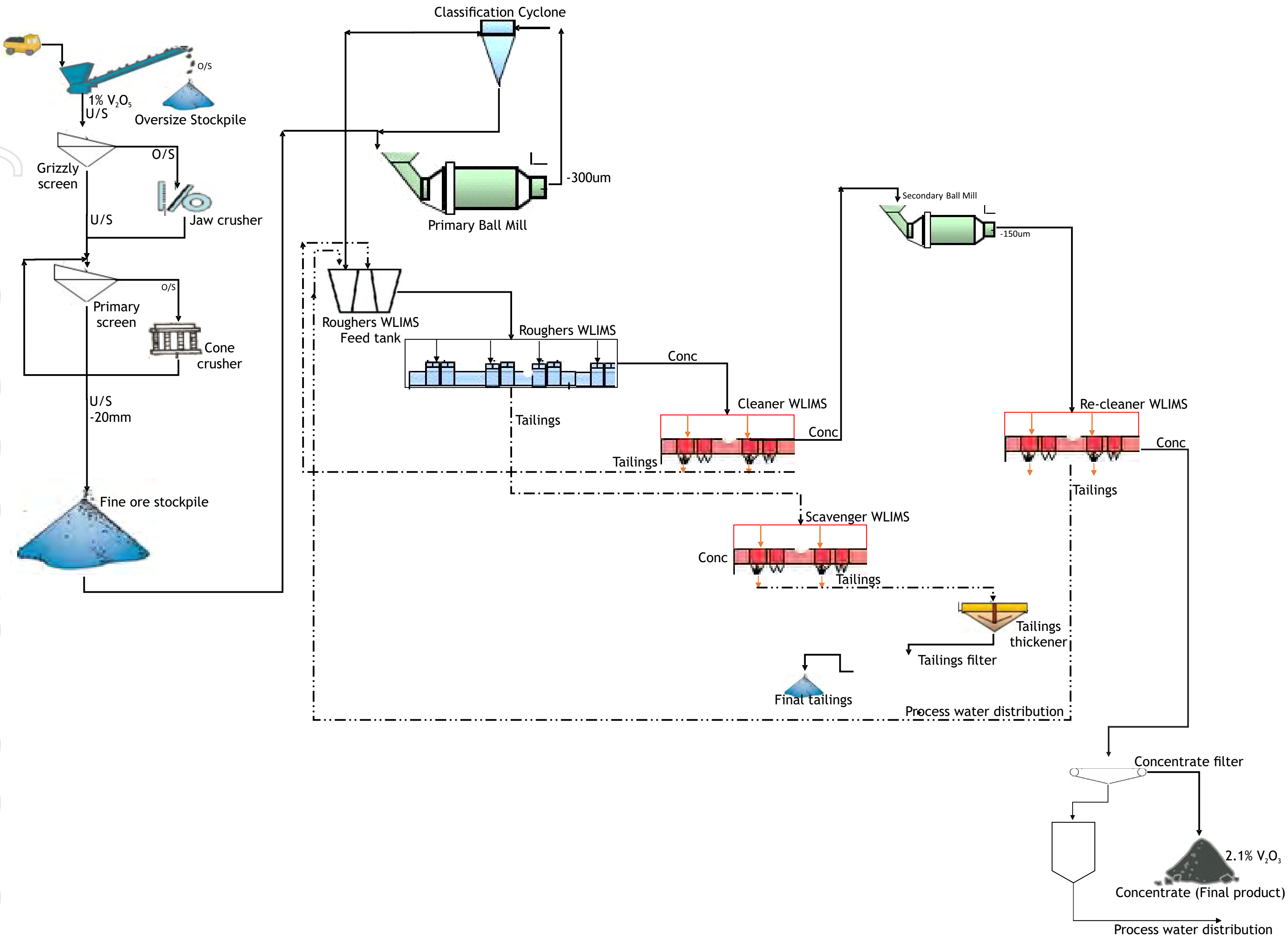
Figure 11 Concentrator - Process block flow diagram



Source: UMS METS (2022)(PP0784.0)

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- tailings = 889,102tpa;
- total feed rate = 133,875tpm; and
- plant design feed rate = 208tph.

It should be noted that plant and process design criteria have been based on projected maximum feed grades achievable. The purpose of this approach was to ensure mechanical equipment design sizing would be suitable for maximum potential operating conditions and not only averages. Thus process design criteria could and do differ from production and financial model inputs and metrics reported in other sections.

The plant will comprise the following main areas:

- two-stage crushing;
- ball milling and hydro cyclone classification;
- three stage wet magnetic separation to produce a refined concentrate;
- dewatering facility to remove water from the residues for re-use as process water;
- concentrate regrind milling;
- re-grind magnetic separation;
- water circuit;
- concentrate handling;
- tailings handling; and
- compressed air circuit.

Major equipment for the concentrator plant will include:

- crushing circuit:
- jaw crusher;
- static screen;
- vibrating grizzly feeder;
- vibrating screen;
- secondary cone crusher;
- crushing circuit conveyors;
- WLIMS units;
- ball mill;
- tailings thickener;
- concentrate re-grind mill;
- tailings belt filter; and
- concentrate belt filter.

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19.2. Concentrator costing

The base date of the concentrator plant cost estimates are July 2022. The UMS METS design and costing has provided capex and opex to a level of accuracy of between -10% to +20% consistent with an AACE Class 3 estimate (funding authorisation).

The capex estimate for the defined scope of works is US$30.58m. This amount excludes any project contingency (which will be allowed for elsewhere). The cost estimate captures the mechanical equipment, civil, structural, platework, pipework, electrical and instrumentation as well as detailed engineering and design. Allowance has also been made for construction management, site supervision, and commissioning costs. The capital cost estimate has been prepared making use of recent market related quotations based on an overall design maturity of approximately 55% - 65%. Up-to-date market related pricing has been obtained for the major mechanical, electrical and instrumentation equipment. Furthermore, updated costing has been obtained for the earthworks, civil and structural steel works packages.

This estimate is based upon the latest revision of the equipment list compiled from design drawings, material take off and bill of quantities generated off these designs, and up-to-date vendor budget pricing received for the majority of the works and a high level preliminary schedule of 19-months.

The opex cost estimate is US$0.733m per month or US$5.50/t ROM.

The production of vanadium concentrate utilises conventional and well understood technology which has been supported by the results of recent metallurgical testwork.

20. SRL plant process metallurgy and plant design

As part of the DFS, engineering firm Consulmet Metals (Pty) Limited ("Consulmet") was contracted by VanRes to carry out the SRL plant design and costing for the Steelpoortdrift Project.

20.1. SRL plant design

The SRL plant will treat concentrate to produce a vanadium flake are >98% V_2O_5. The plant comprises kiln roasting, leaching, desilication, AMV precipitation, flash drying and V_2O_5 flake production. Evaporation and crystallisation to recover Na2SO4 crystals for recirculation to the kiln has also been included. The process block flow diagrams are presented in Figure 12 and Figure 13.

The design was based upon the following:

- total feed rate (wet, at 9% moisture) = 791,224tpa;
- total feed rate (dry) = 720,000tpa;
- operating hours per annum = 7,620hrs pa;
- plant nominal feed rate (wet, at 9% moisture) = 103.84tph;
- plant nominal feed rate (dry) = 94.49tph;
- feed grade = 2.15% V_2O_5;
- recovery = 83.5%;
- final product = 13,190tpa;

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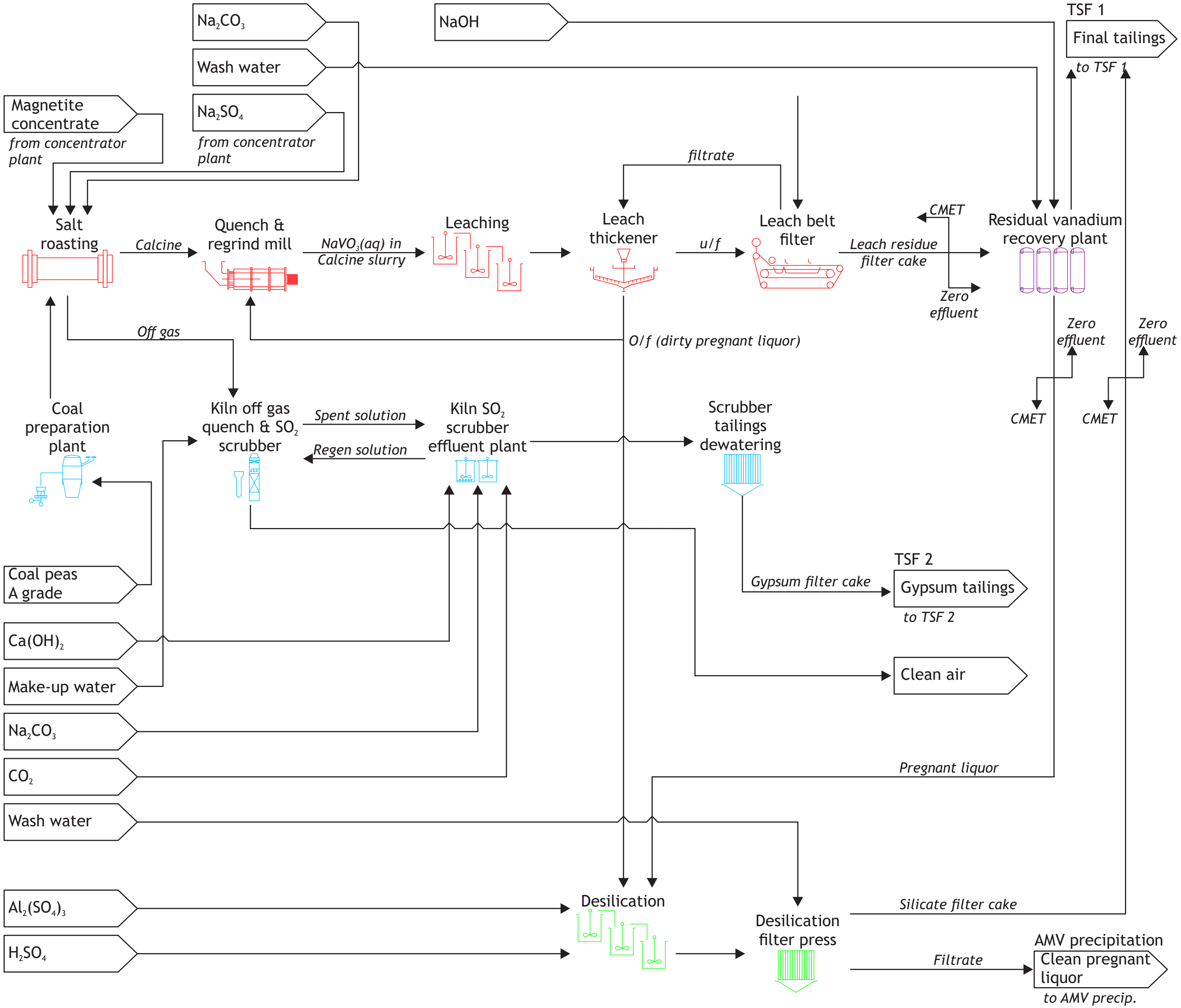
SRI plant - Process block flow diagram (1)

Figure 12



Source: *Consulmet (2022)(VANA-22-001)*

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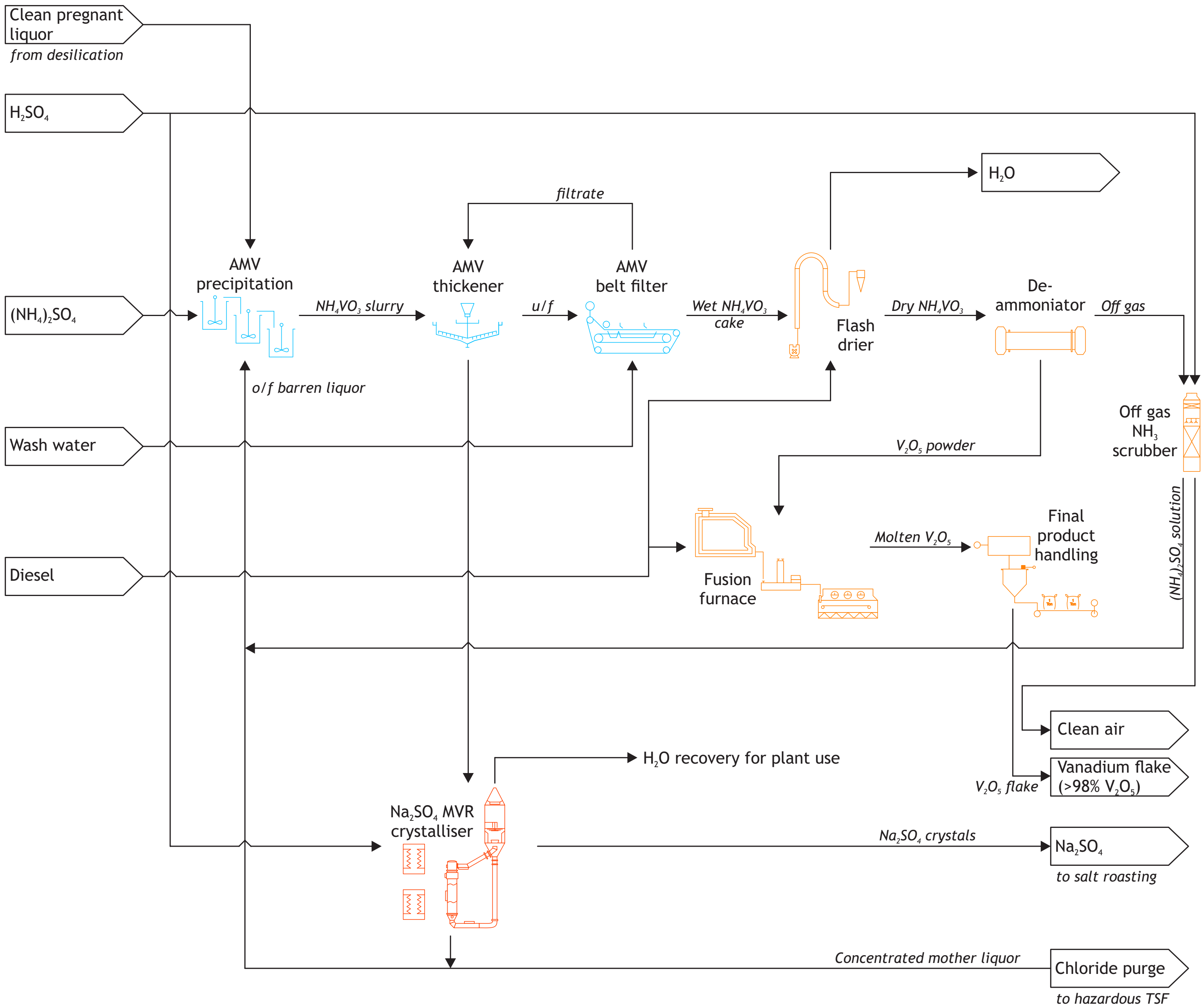
SRI plant - Process block flow diagram (2)

Figure 13



Source: Consulmet (2022)(VANA-22-001)

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- final product grade = 98% V_2O_5;
- leach tailings (wet, at 10% moisture) = 824,560tpa;
- leach tailings (dry) = 742,104tpa;
- gypsum tailings (wet, at 10% moisture) = 33,528tpa;
- gypsum tailings (dry) = 30,175tpa;
- desilication tailings (wet, at 50% moisture) = 2,895.6tpa;
- desilication tailings (dry) = 1,447.8tpa; and
- final chloride purge solution = 56,311.8m^3/a (subject to fluctuations, dependent on water purification plant, brine disposal rates and other blow down flows).

The design includes three separate tailings facilities:

- leach + desilication residue;
- gypsum; and
- chloride purge.

It should be noted that plant and process design criteria have been based on projected maximum feed grades achievable. The purpose of this approach was to ensure mechanical equipment design sizing would be suitable for maximum potential operating conditions and not only averages. Thus process design criteria could and do differ from production and financial model inputs and metrics reported in other sections.

The plant will comprise the following major circuits:

- roasting kiln and cooler with off gas handling equipment;
- water leach and filtration circuit;
- desilication circuit;
- ammonium metavanadate ("AMV") precipitation circuit;
- flake furnace and cooler circuit; and
- Na_2SO_4 crystalliser.

20.2. SRL plant costing

The base date of the SRL plant cost estimates are September 2022. The estimate is considered to meet the required accuracy criteria of the DFS phase, which is within a range of 10% to +20% consistent with an AACE Class 3 estimate.

The capex estimate for the defined scope of works is US$129.357m. The control budget estimate ("CBE") has been populated by means of actual quotes and industry rates for certain services, as well as engineering design and management rates, which represents a fair and transparent CBE as far as a defined DFS estimate. In Consulmet's opinion, the selected rates are considered a fair and reasonable indication of firm costs for execution of the 720ktpa vanadium SRL plant. This is deemed suitable for the application methodology in compiling the Steelpoortdrift Project CBE at DFS level.

The opex cost estimate is US$3.147m per month or US$52.45/t kiln feed or US$2,863/t of >98% V_2O_5 flake. Opex has been calculated based on process design, determination of annual consumption (including volumes) and has then been costed applying current costs received from supplier quotations. Opex was presented as an annual cost and a cost per tonne of feed material processed through the SRL facility. Labour and miscellaneous (Safety, Helath, Environmental, Quality (SHEQ etc.) costs are provided at a head office/operational readiness level and have been included in other sections of DFS. Consulmet is confident that the opex methodologies applied to the VanRes 720ktpa vanadium concentrate processing (or SRL) plant provide a fair estimate of the annual operating expenditure for this project.

The production of vanadium flake utilises conventional and well understood technology which has been supported by the results of recent metallurgical testwork.

21. Tailing storage facilities ("TSFs")

Civil engineering firm, Nurizon (Pty) Limited ("Nurizon") was appointed to carry out the TSF design for both the concentrator plant and the SRL plant (Figure 3).

21.1. Concentrator Site TSF

A TSF is required to store the concentrator tailings, prior to them being returned to the mined out open pits, as part of the rehabilitation process. As such, the TSF will store the first three years' tailings, amounting to 1.3Mm^3, until the end of the LOM. Should sufficient pit room become available prior to the end of the LOM, then tailings transfer may commence earlier. The TSF will have a footprint of 91,951m^2, a maximum height of 15m and a capacity of 1.3Mm^3.

The concentrator tailings material will primarily be comprised of 50% SiO_2, 20% Al_2O_3 and 10% each of Fe-oxides and CaO. It will be of a dry stacking nature and be manually transported by trucks from the concentrator plant, deposited and compacted. The tailings are classified as inert and will thus require a Class D liner. No capping system is required for the TSF as all tailings will be backfilled into the open pit.

The TSF site has been selected based upon proximity to the concentrator plant and is located outside the ultimate open pits and the 100m buffer from the Magagamahubedu River. The footprint was also constrained by the location of the concentrator plant layout and location of the ROM stockpile. The consequence classification assigned to the concentrator plant TSF is 'Significant to High'.

The capex cost for the TSF has been estimated, via a tender process, at US$1.36m including 8% contingencies. If all construction material is sourced from site, the capex cost estimate would reduce to US$0.93m. The opex has been estimated at US$0.43m per annum using the tender price for bulk earthworks and the annual volume of tailings.

The concentrator TSF has been designed and the costs estimated to the required DFS level accuracy of -10% to +20%.

21.2. SRL plant TSF

A TSF is required to store SRL plant tailings for both Phase 1 and Phase 2. The TSF site was selected based upon proximity to the plant, the location of the boundary fences and existing infrastructure. It was constrained by the identification of cultural heritage artefacts in the nearby erosion channels.

The tailings material will be in the form of filtered cakes comprising iron (Fe) in the form of hematite (approximately 80%), TiO_2 (approximately 13%) and Al_2O_3 (approximately 4%) and as such is classified as Type 3 waste. The TSF has been designed with a Class C barrier system and will be operated using a dry stacking method.

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The tailings from the SRL plant will amount to 7.2Mm³. The Phase 1 TSF has been designed with footprint of 348,826m², a maximum height of 30m, and a capacity of 7,28Mm³ of tailings. The Phase 2 TSF has been designed with footprint of 144,414m², a maximum height of 30m, and an additional capacity of 4.33Mm³ of tailings.

A capping solution was designed for the TSF, according to the with the Minimum Requirements for Waste Disposal by the Department of Water Affairs ("DWA").

The consequence classification assigned to the concentrator plant TSF is 'Significant to High'.

The capex cost for the TSF has been estimated, via a tender process, at US$18.45m including 8% contingencies. If all construction material is sourced from site, the capex cost estimate will reduce to US$14.07m. The opex has been estimated at US$2.0m per annum using the tender price for bulk earthworks and the annual volume of tailings.

The SRL TSF has been designed and the costs estimated to the required DFS level accuracy of -10% to + 20%.

22. Power generation

DRA Projects (Pty) Limited ("DRA") was contracted by VanRes to conduct a DFS to consider the implementation of a solar PV plant at the mine site. VanRes believes in the importance of environmental, social and governance standards in its work, therefore this study leveraged on both the economic and environmental advantages of a solar power plant. PV systems convert energy from solar irradiation to electrical energy and, as such, this power source is considered a renewable energy resource. The solar power plant scope of supply allowed for the following infrastructure and assets:

- 5MW AC, 6MWp DC solar PV plant; and
- 1.0MW/4.0MWh VRF BESS.

The capex was estimated at US$11.154m including contingencies, whilst the annual opex cost was estimated at US$0.241m. To present the capex and opex as a holistic energy cost, the costs were applied to a financial model to determine the blended cost of energy. The study clearly demonstrated the benefits to the Steelpoortdrift Project by selecting a grid-tied PV and BESS rather than only a grid connection to the South African power authority.

In addition, the proposed solar PV plant will enable VanRes to save 14,192t CO_2 per year on emissions, 34% less than the grid-only annual Scope 2 emissions.

The study concluded that the proposed solar PV power plant would be able to provide a sustainable and reliable renewable energy source for the mine site.

23. Ore Reserve estimate

The Ore Reserve estimate on which the DFS was based has been prepared by Sound Mining in accordance with the JORC Code, 2012. The reader is referred to *ASX announcement of 4 October 2022 : VR8 updates mineral resource and ore reserve statements for the Steelpoortdrift vanadium project* for the detailed description of the Ore Reserve estimate.

The Ore Reserves were determined by considering only the quantity of Measured and Indicated Mineral Resources depleted by the LOM schedule, which included a marginal amount of Inferred Mineral Resources (< 5%).

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The pit optimisation was commpleted using Studio NPVS software, which identified a suite of nested pit shells based upon the mine design criteria (Table 5). The mine design, sequencing and scheduling process relied on selected minable units of 5m^3 in the 20m x 20m x 1m blocks of the Mineral Resource model. Additional allowances were included for dilution, mining loss and geological losses.

The modifying factors applied in the derivation of the Ore Reserves are tabulated in Table 6.

Table 6: Modifying Factors

MODIFYING FACTORS	UNIT	VALUE
LOSSES AND DILUTION		
Geological losses	%	5.00
Planned mining losses *	%	6.90
Planned dilution *	%	3.20
Unplanned mining losses	%	3.00
Unplanned dilution **	%	3.00
PLANT RECOVERY		
Concentrator	%	98.00
SRL	%	84.40
TOTAL	**%**	**82.72**
GRADES		
V_2O_5 grade and mass yield	Included in Mineral Resource block model	
Vanadium flake	%	98.00
OTHER		
Flake price	US$/lb	9.50
Exchange rate	US$:ZAR	15.50

Source: SMI (2022)(PR/SMS/1131/21)

* - As per regularised model for all Mineral Resources, ** - With zero grade

The resultant Ore Reserve estimate is tabulated in Table 7, and its location is presented in Figure 7.

Table 7: Current Steelpoortdrift Project Ore Reserve estimate (31 August 2022) (JORC, 2012)

ORE RESERVE CATEGORY	TONNAGE (Mt)	ROM GRADE (V_2O_5 %)	CONTAINED V_2O_5 (kt)	TONNAGE BY CATEGORY (%)
Proved	30.23	0.70	213.09	**39.3%**
Probable	46.62	0.72	337.32	**60.7%**
TOTAL / AVE	**76.86**	**0.72**	**550.41**	**100.0%**

Source: SMI (2022)(PR/SMS/1131/21)

Notes:

Reported in accordance with the classification criteria of the JORC Code, 2012.

Stated at a price of US$9.50/lb.

Stated on a 100% attributable basis for the Steelpoortdrift Project, of which VanRes owns 50%.

Reported at the point of delivery for processing.

Any apparent computational errors due to rounding are not considered significant.

Ore Reserve estimates contained herein may be subject to legal, political, environmental or other risks that could materially affect the potential development of such Ore Reserves.

Losses that could occur as a result of transportation of content or flake are considered to be negligible.

No Inferred Mineral Resources are included in the Ore Reserve estimate.

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23.1. Differences between Ore Reserve estimates

The differences between the previous and current Ore Reserve estimates are presented in Table 8. The differences cannot be reconciled as material changes have taken place to the LOM and associated production schedule when compared to the previous Ore Reserve estimate.

Table 8: Differences between successive Ore Reserve estimates

	30 JUNE 2021			31 AUGUST 2022			DIFFERENCE		
RESOURCE CATEGORY	TONNAGE (Mt)	ROM V_2O_5 (%)	CONT'D V_2O_5 (t)	TONNAGE (Mt)	ROM V_2O_5 (%)	CONT'D V_2O_5 (kt)	TONNAGE (Mt)	ROM V_2O_5 (%)	CONT'D V_2O_5 (Mt)
Proved	31.17	0.76	240.00	30.23	0.70	213.09	**-3%**	**-8%**	**-13%**
Probable	42.68	0.75	320.00	46.62	0.72	337.32	**8%**	**-4%**	**5%**
TOTAL / AVE	**73.85**	**0.77**	**560.00**	**76.86**	**0.70**	**550.41**	**4%**	**-11%**	**-2%**

Source: SMI (2022)(PR/SMS/1131/21)

24. Baseline studies

The environmental baseline descriptions provide a detailed assessment of the receiving environment for the Steelpoortdrift Project and comprise a series of specialist studies which were reported upon for both the mine/concentrator site and SRL site. The baseline descriptions provide the information needed to compile the Environmental Impact Assessment ("EIA") and EMPr and most importantly, form the basis upon which all future impacts of the project can be measured.

At the date of issue of this DFS report the baseline studies still underway for the mine site included soil, land use and land capability, air quality, environmental noise, blasting and vibration, visual, surface water and aquatic ecology, wetland and cultural heritage. Only the air quality and terrestrial ecology were still underway for the SRL site. All outstanding baseline studies are on track to be completed the beginning of Q4 2022 and will thus be timeously available for inclusion into the environmental applications and updates highlighted in the following subsection.

Based upon the results of the studies to date, no environmental or social fatal flaws were identified for the Steelpoortdrift Project.

25. Environmental impact and management

The environmental and social impacts of the Steelpoortdrift Project were assessed as at September 2022 in accordance with the minimum requirements in the EIA Regulations, 2014 and the associated official guidelines. These will continue be updated as the various other specialist studies are completed. As at the date of issuing the DFS Report, no environmental issues were identified that resulted in a 'No Go' option being executed.

For the purposes of DFS level reporting, environmental, social and governmental aspects meet the requirements, however a number of tasks are to be completed on the basis of the outcomes of this DFS. However, for the purposes of meeting the requirements for the development of the Steelpoortdrift Project the following is required:

- finalise and submit the Water Use Licence applications ("WULAs") for both project sites on the basis of the design documentation (submission planned for Q4 2022);

- finalise and submit the EIA in support of the Integrated Environmental Authorisation ("IEA") application, in terms of NEMA and NEMWA, for the proposed SRL plant and associated activities based upon the design documentation (submission planned for Q4 2022); and
- finalise and submit the S102 EMPr amendment application for the mine and concentrator site (submission planned for Q4 2022).

26. Operations management and readiness

VanRes has elected an operations management strategy using primarily contractors for the mining and processing aspects, whilst overall management will rest with VanRes.

An operational readiness ("OR") gap assessment was conducted by Minopex Technical Advisory (Pty) Limited ("Minopex") in July 2022. The report outlined the operational readiness workstream definitions that are required to be developed and managed for the concentrator and SRL plants to ensure that the Steelpoortdrift Project transitions seamlessly through the project development to operational phase. Its objectives were to highlight the current state of operational readiness for both plants, to define future workstreams or activities to be developed, areas to be prioritised and to provide a high-level roadmap to the concentrator and SRL plants' operational readiness team for developing the defined work streams for each element.

The OR gap assessment outcome indicated a 1% operational readiness and has highlighted that all 14 workstreams have not been developed. However, at the current DFS stage of the Steelpoortdrift Project, this is not considered a major risk to the project as there is still sufficient time during the next phase of the project for OR to be developed.

It will imperative that these workstreams are developed during the implementation phase of the Steelpoortdrift Project. It is important that the VanRes owners' team is established by Q1 of FY2024 to appoint the O&M contractor for the concentrator and SRL plants and allow for sufficient time for the OR development. Currently, onboarding of VanRes' owner's team is planned to commence by March 2023 and ramp up as required over implementation period.

A detailed capital implementation cost and monthly operational budget was developed for each discipline. The total capex estimate for the OR plan ("ORP") implementation is US$7.05m excluding contingencies, whilst the monthly ORP opex estimate is US$1.10m.

27. Project development and timing

Pertinent timeline aspects are presented in Table 9.

Pertinent aspect of the project development timing are summarised as follows:

- investment decision for the project will be reached by 1 July 2023 at which point long lead item orders will be placed and the engineering, procurement and construction management ("EPCM") contractors appointed;
- site based construction of both plants will commence in March 2024;
- a construction period of 12 months and first water deadline of 1 March 2025 for the concentrator was used as the basis of the scheduling;

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- the SRL plant construction period was set at 18 months and overlaps with the construction of the concentrator such that it allows three months (June 2025 to August 2025) for the concentrator to produce commissioning feedstock for the SRL plant;
- it was estimated that mining would commence production at the end of Q4 of 2024 to produce feedstock for the concentrator for three months;
- the ramp-up of the concentrator and SRL plants was scheduled to commence in December 2025 and is scheduled for six months;
- implementation of the operational readiness workstreams was scheduled around the above-mentioned key dates and timelines and minor early works will commence in Q1 2024 for safety, health, environment, and quality ("SHEQ"), information & communications technology ("ICT") and systems, metal accounting, and asset & maintenance management ("AMM") workstreams, if possible;
- on-boarding of the bulk of the personnel is planned for Q2 and Q3 2024 to be ready for the latter stages of commissioning of the two plants; and
- training and development was scheduled to coincide with the onboarding of personnel in 2024 for both plants.

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Table 9: Project timeline

	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
YEAR	2022						2023												2024												2025												2026					
QUARTER	Q3			Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1			Q2			Q3			Q4			Q1			Q2		
MONTH	-32	-31	-30	-29	-28	-27	-26	-25	-24	-23	-22	-21	-20	-19	-18	-17	-16	-15	-14	-13	-12	-11	-10	-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
DFS																																																
Investment decision																																																
Project financing activities																																																
Award contracts (EPCM/O&M/Mining)																																																
Execution stage																																																
Long lead procurement																																																
Mine production and stockpile																																																
Concentrator plant construction																																																
C1 commissioning																																																
C2 commissioning																																																
C3 commissioning																																																
C4 commissioning																																																
Handover																																																
Concentrator production and stockpile																																																
SRL plant construction																																																
C1 commissioning																																																
C2 commissioning																																																
C3 commissioning																																																
C4 commissioning																																																
Estimated first product																																																
Handover																																																
Ramp up																																																

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28. Market assessment

The market assessment was prepared internally by VR8 using public domain sources of information. VR8 also commissioned an independent assessment by Deloitte of the Steelpoortdrift Project in relation to the vanadium market and price.

Vanadium is a high-value metal. It is grey, soft, ductile and is commonly used in the production of alloys or within the chemical industry. More recently, there has been growing interest in vanadium for the energy industry. Considering the uses of vanadium, the market drivers would typically be determined by the growth, or lack thereof, of:

- the alloy market, in particular the steel sector, with the steel market being closely linked to Chinese and global economic growth;
- the construction industry;
- the aerospace industry;
- the chemical industries; and
- the energy storage market.

The growth in the use of vanadium redox flow battery ("VRFB") systems is forecast by analysts to increase demand for vanadium and create a market deficit in the medium term, supporting prices and primary production of the material. A key player in the VRFB market, expect that the structural supply deficit will persist. Other producers and analysts have interrogated the vanadium market balance, estimating a rising deficit from 2021. Future supply of vanadium from primary sources is available, but bottlenecks in bringing these assets into production may result in a plateau in supply as the VRFB technology matures in operation. However, vanadium uptake in the green energy revolution will only be evidenced by the continued adoption and successful installation of VRFB storage operations.

As per independent market assesment completed by Deloitte; "*The vanadium market and price are expected to continue to exhibit volatility in the near term due to geopolitical conflict, the continued COVID-related economic downturn, and projected uncertainty in the long-term rate of uptake of VRFB systems and deficit in supply. The volatility in price is typical of a market where supply and demand are finely balanced. A minor interruption to supply or shift in sentiment results in short-lived, large price fluctuations. Therefore, a wide range in price cannot be excluded from the near-term or long-term outlook. A price range of US$7.20-US$11.60/lb V_2O_5 may be considered.*"

VR8's price forecast of US$9.50/lb used in the DFS cash flow was within the forecast range provided by the Deloitte independent assessment.

29. Marketing and sales contracts

No marketing or sales contracts have been entered into as yet. However, VR8 have obtained conceptual non-binding term sheets for off takes based both on take or pay, as well as marketing agency contract models, from reputable commodity trading houses. These conceptual term sheets have been used as a basis for cash flow calculations as well as the sales costs used in the financial model.

*Values might slightly differ due to rounding. US$/AUD Exchange Rate 1/10/22

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30. Economic assessment

The economic assessment was prepared by Sound Mining using inputs from the various independent specialist experts and engineers. The economic assessment meets the requirements of a DFS in its level of accuracy of the input parameters and may be considered as the most accurate representation of the value of the Steelpoortdrift Project based upon the information available at the date of this report.

The base assumptions included the following:

- 25 year LOM;
- base currency: US$, with conversions from ZAR to US$ at 15.50:1.00 (@ 2 October 2022 exchange rate ZAR18.09:US$1);
- base date: September 2022;
- overall capital contingency: 5.74%;
- >98% V_2O_5 flake price of US$9.50/lb (Deloitte Market Study – mid range flake price); and
- governmental royalty of 5% of gross revenue (as per MPRDA for refined metal).

30.1. Capex summary

A summary of the capital expenditure estimate for delivering the LOM plan is presented in Table 10. It covers construction capital, the portion of the operating costs that have been capitalised (i.e., US$27.21m prior to July 2025) and a stay in business ("SIB") provision as a percent of the estimated construction capital (excluding EPCM fee). Separate contingencies have been applied to the individual capex items and these result in an overall contingency of 5.7% for the Steelpoortdrift Project. The capex timelines and forecast have been informed by the various technical studies undertaken in support of the DFS, LOM plan and Ore Reserve estimate.

The mining capital provision amounts to only a percent of the total expenditure because the contractor will be responsible for purchasing the mining fleet and constructing the required haulage roads. These costs are therefore deemed to be part of the operating contract.

Table 10: Summary of total capex estimate for Phase 1 and Phase 2 stages

		BY PHASE (US$m)	
DESCRIPTION	**TOTAL LOM (US$m)**	**PHASE 1 (Yr 1-4)**	**PHASE 2 (Yr 5 - 25)**
CONSTRUCTION CAPEX			
Mining	3.93	1.69	2.24
Concentrator	61.16	30.58	30.58
SRL plant	256.37	130.36	126.01
TSF	27.95	14.92	13.03
Total contingency	20.91	20.91	0.00
Site overheads	23.16	12.29	10.88
TOTAL CONSTRUCTION CAPEX	**393.48**	**210.73**	**182.74**
CAPITALISED OPEX			
Pre revenue opex	27.21	27.21	0.00
Critical spares	2.54	1.27	1.27
Operation and maintenance spares (2yrs)	3.53	1.77	1.77
SUB TOTAL CAPITALISED OPEX	**33.27**	**30.25**	**3.04**
SIB			
Mining	0.00	0.00	0.00

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		BY PHASE (US$m)	
DESCRIPTION	TOTAL LOM (US$m)	PHASE 1 (Yr 1-4)	PHASE 2 (Yr 5 - 25)
Concentrator	10.35	2.35	42.24
SRL plant	44.59	2.89	52.04
SUB TOTAL SIB CAPITAL	**54.93**	**5.24**	**94.28**
TOTAL PROJECT COST	**481.68**	**246.22**	**280.06**

Source: Sound Mining (PR/SMS/1131/21MR)

Note: VanRes report that the mining contractor has included SIB in their quoted operating costs for the mining operation.

The Company plans to obtain funding for the project from a combination of conventional project finance debt with the remaining funding to be sourced from strategic equity and/or equity capital markets. Steelportdrift has the potential to support support ~60% debt gearing of the total funding requirement. Discussions with potential debt financiers have commenced with a view to securing indicative terms sheets in the lead up to final investment decision during mid to late CY2023.

As part of this process, HCF International Advisors Ltd (“HCF”) has been appointed to assist in the raising of project finance for the development of the Project. HCF has extensive experience in providing structured finance advisory and raising substantial amounts of capital for the global mining sector, having raised over US$12Bn in project financing since 2003.

In parallel, the Company has commenced a process to secure offtake and strategic investment from a range of potential international traders, downstream users of vanadium and strategic investors with a view to supporting the project financing of the Project.

30.2. Opex summary

The opex estimated for the LOM plan are summarised in Table 11. Approximately half (49%) of the opex is associated with the SRL plant. On-site P&G’s, off site G&A’s, overheads and cost of sales together contribute approximately 21% of the operating costs.

Table 11: Summary of opex estimate

	FIXED COMPONENT (US$ 000s)		VARIABLE COMPONENT (US$/ROM t)	TOTAL COST (US$/lb flake)
DESCRIPTION	PHASE 1	PHASE 2		
Mining	2,189	3,976	6.49	0.57
Concentrator	425	0	5.45	0.41
SRL plant	2,000	4,000	19.78	1.57
On site P&Gs	18,430	28,333	0.00	0.62
Off mine G&As	927	1,391	0.00	0.03
Overheads and cost of sales	0	0	0.44	0.03
TOTAL OPEX	**23,971**	**37,700**	**32.15**	**3.24**

Source: Sound Mining (PR/SMS/1131/21MR)

A contingency was not applied to the opex estimates in the DCF. The impact of adding a contingency of 10% to all the opex estimates to account for any risk of inaccuracies related to the level of engineering definition usually involved at this level of study, results in approximately an 8% reduction in the $NPV_{7.5\%}$.

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30.3. DFS result

The DCF model returned an $NPV_{7.5\%}$ of US$1,212m with an associated internal IRR of 41.7% and an estimated payback period of 27 months from start of flake production when considering the undiscounted cash flows (Table 12).

The indicative funding requirement, or maximum cumulative negative cash flow ("MCNCF") for the Steelpoortdrift Project is estimated at US$243m and will be required immediately. The computed undiscounted after tax, free cash flow over the LOM is graphed in Figure 14.

The scheduled LOM production includes approximately 4% of Inferred Mineral Resource which can be considered as additional revenue or treated as waste. The impact of excluding the Inferred Mineral Resources from the LOM was assessed, and the results are presented Table 12. The NPV reduced by <6% when the Inferred Mineral Resources in the LOM scheduling was treated as waste.

The key economic assessment results of the Phase 1 and Phase 2 DCF are presented in Table 1, whilst the annual mining / production schedule, costs and financials are presented in Appendix 1.

Table 12: Summary of DCF result, including and excluding Inferred Mineral Resources

		INFERRED MINERAL RESOURCES	
DESCRIPTION	UNIT	INCLUDING	EXCLUDING
>98% V_2O_5 flake	US$/lb	9.50	
$NPV_{7.5\%}$*	US$m	1,212	1,143
IRR	%	41.7	41.0
MCNCF	US$m	-210	
Payback **	months	27	

Source: Sound Mining (PR/SMS/1131/21MR)

Notes: * - At project level, based on 100% ownership.

** - From first flake production.

30.4. Sensitivity analysis

A sensitivity analysis was carried out on the DCF for an increase of 20% and decrease of 20% of the capex, opex and product price. The sensitivities are graphed in Figure 14, while the results are tabulated in Table 13. The results indicate that the LOM cash flow is most sensitive to changes in revenue. These would typically include parameters such as price, cost of sales, and/or processing recovery. The expected returns will be less sensitive to changes in opex and/or capex.

Table 13: Results of DCF sensitivity analysis to revenue, opex and capex

		VARIATION PERCENTAGE				
VARIABLE	UNIT	80%	90%	100%	110%	120%
Net revenue	US$m	723	970	**1,212**	1,450	1,687
Opex	US$m	1,391	1,302	**1,212**	1,121	1,030
Capex	US$m	1,274	1,243	**1,212**	1,182	1,151

Source: Sound Mining (PR/SMS/1131/21MR)

A sensitivity to variations in the discount rate was applied to the DCF and the results are presented in Table 14. The Project remains substantially positive even at a discount rate of 12.5%.

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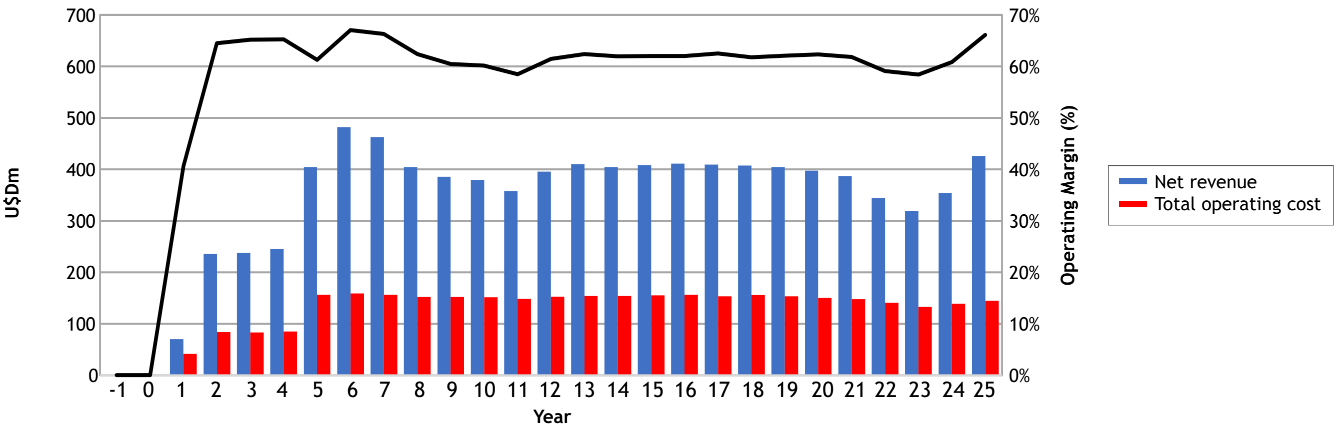
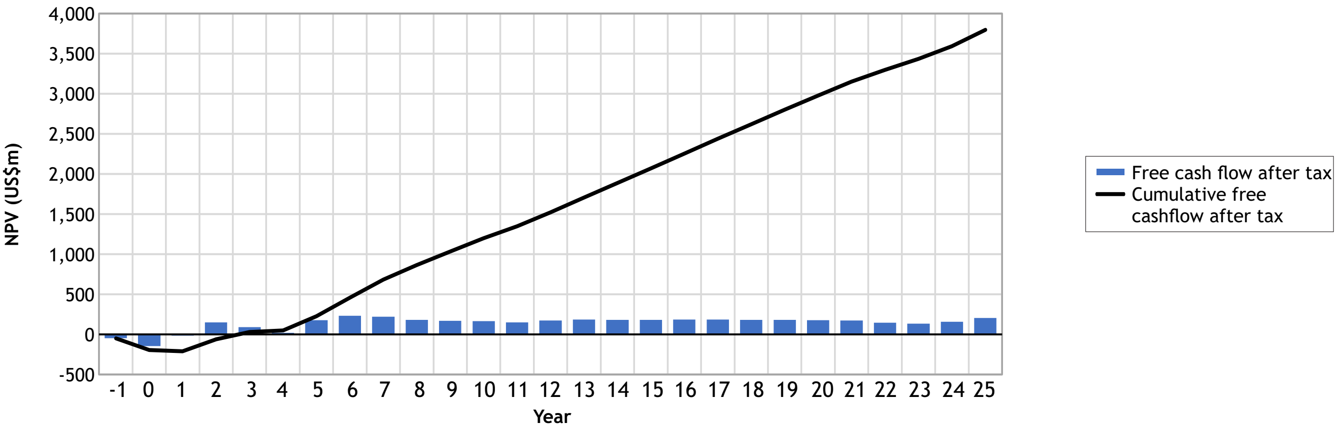
Graphs of cash flow results and sensitivity analysis — Figure 14

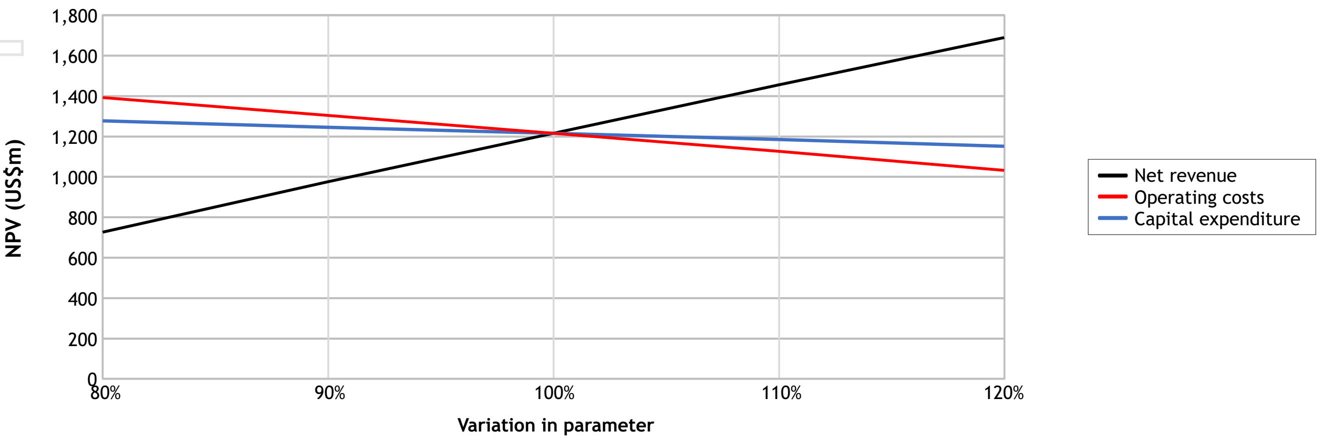
Operating margin over LOM



Free cashflow after tax



Sensitivity analysis



Source: Sound Mining (2022)(PR/SMS/1131/21)

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Table 14: Results of DCF sensitivity analysis to discount rate

		VARIATION IN DISCOUNT RATE					
VARIABLE	UNIT	0.0%	2.5%	5.0%	7.5%	10.0%	12.5%
Net revenue	US$m	3,796	2,524	1,728	**1,212**	869	633

Source: Sound Mining (PR/SMS/1131/21MR)

A sensitivity to variations in the >98% V2O5 flake price was also applied to the DCF, and the results are presented in Table 15.

Table 15: Results of DCF sensitivity analysis to >98% V_2O_5 flake price

		VARIATION IN >98% V_2O_5 FLAKE PRICE							
VARIABLE	UNIT	6.00	7.00	8.00	9.00	9.50	10.00	11.00	12.00
Net revenue	US$m	357	601	844	1,089	**1,212**	1,336	1,583	1,830

Source: Sound Mining (PR/SMS/1131/21MR)

Sound Mining was comfortable with the modifying factors used for the LOM plan and believes that the cash flow forecasts are based on realistically achievable estimates.

The capex forecast in the DCF model is reasonable in the context of the proposed development and construction schedules, with no unforeseen major additional capital expenditures expected. Particular attention was paid to assessing the impact of possible uncertainties in the opex estimate, but the results illustrate that the Ore Reserve estimate remains supported by positive and healthy annual cash flow margins over the LOM of 25 years.

31. Risks and opportunities

The Steelpoortdrift Project risks and opportunities were identified for each of the major disciplines during the DFS study. No fatal flaws were identified. The most significant risks relate to the following:

- timing of water and power connections;
- pollutants, in the form of gaseous emissions, relating to the SRL plant; and
- pollution of the water courses resulting from damage to the PCD or purge dam liners at the SRL site.

Numerous opportunities were identified which will require further detailed investigation as the project develops. The most significant opportunities have been outlined in the ongoing value engineering studies.

32. Ongoing value engineering studies

A number of significant opportunities have been identified that would reduce costs and increase the potential Mineral Resources, Ore Reserves and the associated LOM plan to more than 100yrs, decrease environmental impacts and increase earnings potential. These opportunities have been investigated to a level less than that required for inclusion into the DFS. The following opportunities may be considered by investors but will require additional, more detailed value engineering studies going forward:

- ropeway conveyor system to transport concentrate from mine site to SRL plant;
- removal of community and water course constraints on Mineral Resource estimation and associated LOM;

- residual vanadium recovery plant; and
- titanium in SRL tailings recovery.

33. DFS level of completion and outstanding work

This DFS has met the detail and accuracy required in 12 of the 15 disciplines, with the overall DFS completion estimated at 98%.

34. Conclusions

After the positive results obtained from the Scoping Study prepared in 2020 and the subsequent the PFS completed in 2021, VR8 initiated the DFS in January 2022. The DFS has assessed the technical and economic merits of mining the Steelpoortdrift Project via open pit mining methods and processing of ore through a concentrator and subsequent SRL plant to produce vanadium >98% V_2O_5 flake.

This DFS has met the detail and accuracy required in 12 of the 15 disciplines, with the overall DFS completion estimated at 98%.

The DFS utilised all information up to and including the date of publication of this DFS Report (30 September 2022). Based on this information and the assumptions, the DFS has indicated the Steelpoortdrift Project to be robust and economically feasible to produce a total of ~484,000t of >98% V_2O_5 flake over a 25 year period.

The economic assessment demonstrated the following:

- $NPV_{7.5\%}$ of US$1,212m, with IRR of 42%;
- payback period of 27 months from start of flake production;
- 96% of the 25 year LOM classified as Proven and Probable Ore Reserves. Exclusion of the Inferred Mineral Resources decreased the NPV marginally (<6%) to US$1,143m, at a 7.5% discount rate, and the IRR to 41%; and
- sensitivities indicated a robust project which remained positive with the following DCF input flexing:
- 20% decrease in revenue; or
- 20% increase in opex; or
- 20% increase in capex; or
- increase in discount rate to 12.5%; and
- decrease in >98% V_2O_5 flake price to US$6.00/lb.

This DFS has also demonstrated that there is potential to further optimise project economics through the inclusion of focussed value engineering studies identified to reduce project costs, increase the LOM, increase earning potential and reduce environmental impacts.

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This announcement has been authorised for release by the Board of Vanadium Resources Limited.

For further information please contact:
Jurie H. Wessels
Executive Chairman and Founder
Vanadium Resources Limited
jurie@lexrox.co.za

Disclaimer

Some of the statements appearing in this announcement may be forward-looking statements. You should be aware that such statements are only predictions and are subject to inherent risks and uncertainties. Those risks and uncertainties include factors and risks specific to the industries in which VR8 operates and proposes to operate as well as general economic conditions, prevailing exchange rates and interest rates and conditions in the financial markets, among other things. Actual events or results may differ materially from the events or results expressed or implied in any forward-looking statement. No forward-looking statement is a guarantee or representation as to future performance or any other future matters, which will be influenced by a number of factors and subject to various uncertainties and contingencies, many of which will be outside VR8's control.

The Company does not undertake any obligation to update publicly or release any revisions to these forward-looking statements to reflect events or circumstances after today's date or to reflect the occurrence of unanticipated events. No representation or warranty, express or implied, is made as to the fairness, accuracy, completeness or correctness of the information, opinions or conclusions contained in this announcement. To the maximum extent permitted by law, none of VR8, its directors, employees, advisors or agents, nor any other person, accepts any liability for any loss arising from the use of the information contained in this announcement. You are cautioned not to place undue reliance on any forward-looking statement. The forward-looking statements in this announcement reflect views held only as at the date of this announcement.

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Competent Persons Statement and Previously Reported Information

Exploration Results and Targets:

The information in this announcement does not contain any new information in relation to Exploration Results or Targets and the Company confirms that any information relating to exploration work has not materailly changed from previously reported information.

Mineral Resource Estimations and Ore Reserves:

The information in this statement that relates to the Mineral Resource and Ore Reserve Estimates of the SPD project, is based on information that has been reviewed by Ms S Turnbull and Mr V Duke of Sound Mining International SA (Pty) Limited ("Sound Mining"). They both have sufficient experience, which is relevant to the activity being undertaken, to qualify as Competent Persons in terms of the JORC Code, 2012 Edition.

Ms Turnbull is a registered Professional Natural Scientist (Pri.Sci.Nat.) with the South African Council for Natural Scientific Professions ("SACNASP" – Reg. No.:117787) and a member of the Geological Society Council of South African ("GSSA"). Ms Turnbull has reviewed the Exploration results and Mineral Resource estimate in this announcement and has given her permission for the publication of this information in the form and context within which it appears.

Mr Duke is a registered Professional Engineer (Pr.Eng.) with the Engineering Council of South Africa ("ECSA" – Reg. No.:940314) and a Fellow of The Southern African Institute of Mining and Metallurgy ("SAIMM"). Mr Duke has reviewed the Ore Reserve Statement in this announcement and has given his permission for the publication of this information in the form and context within which it appears.

Metallurgical Results:

The information in this announcement that relates to metallurgy has been compiled and assessed under the supervision of Mr Eugene Nel, a Professional Engineer of the Engineering Council of South Africa and a Member of the South African Institute of Mining and Metallurgy (both Recognised Professional Organisations as defined in the JORC Code). Mr Nel is the Chief Executive Officer ("CEO") of VR8 and has sufficient experience that is relevant to the style of mineralisation and type of deposit under consideration and to the activity being undertaken to qualify as a Competent Person as defined in the 2012 Edition of the JORC Code. Mr Nel consents to the inclusion in this announcement of matters based on his information in the form and context in which it appears.

The Company confirms that all material assumptions and parameters underpinning metallurgical testwork previously continue to apply and have not materially changed and that it is not aware of any new information or data that materially affects the information that has been included in this announcement.

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Appendix 1: Annual Mining / Production Schedule, Costs and Financials

Description	Units	Tot / Avg	-1	0	1	2	3	4	5	6	7	8	9	10	11-25
Mining															
Total Ore RoM	Mt	80.3	0.0	0.0	1.5	1.7	1.7	1.7	3.5	3.5	3.6	3.5	3.6	3.6	52.5
Average V_2O_5 Grade	%	0.71%	0.00%	0.00%	0.84%	0.86%	0.81%	0.82%	0.81%	0.84%	0.76%	0.70%	0.68%	0.68%	0.69%
Total Material Moved – Tonnes	Mt	150.9	0.0	0.0	1.6	2.1	2.6	2.1	6.5	5.6	6.9	7.0	7.5	7.4	101.6
Production															
Total Concentrate Produced	Mt	29.1	0.0	0.0	0.6	0.8	0.8	0.8	1.4	1.5	1.3	1.2	1.2	1.2	18.4
Produced Product - 98% V_2O_5 Flake	Kt	484	0	0	5	13	12	13	23	26	24	21	20	20	306.4
Revenue															
Net Revenue	US$ M	9,138.1	0.0	0.0	70.0	235.9	237.5	244.9	404.1	481.9	462.8	404.3	385.3	379.5	5,831.9
Operating Costs															
Fixed	US$ M	874.3	0.0	0.0	11.3	22.7	22.7	24.0	37.7	37.7	37.7	37.7	37.7	37.7	567.5
Variable	US$ M	2,582.6	0.0	0.0	30.2	61.1	60.1	61.2	118.8	121.0	118.5	114.4	114.6	113.6	1,669.1
Total Operating Cost	US$ M	3,456.9	0.0	0.0	41.5	83.8	82.8	85.2	156.5	158.7	156.2	152.1	152.3	151.3	2,236.5
Operating Margin	US$/lb V2O5 Flake	3.24	0.00	0.00	3.44	3.04	3.02	3.09	3.06	2.80	2.96	3.25	3.39	3.42	3.31
Capital Expenditure															
Construction Capital Expenditure															
Mining	US$ M	3.9	0.0	1.7	0.0	0.0	0.0	0.4	1.0	0.0	0.0	0.0	0.0	0.0	0.8
Concentrator	US$ M	61.2	6.6	23.1	0.9	0.0	1.0	29.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SRL	US$ M	256.4	34.7	75.9	17.6	2.2	46.7	79.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Tailings Dam	US$ M	27.9	0.0	14.9	0.0	0.0	0.0	13.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Site Overheads	US$ M	20.9	3.6	15.8	1.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Construction Capital Expenditure	US$ M	370.3	44.9	131.4	19.9	2.3	47.7	122.3	1.0	0.0	0.0	0.0	0.0	0.0	0.8
Capitalised Operating Costs															
Pre Revenue Operating Costs	US$ M	27.2	1.1	3.6	22.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Critical Spares	US$ M	2.5	0.0	1.3	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Operation & Maintenance Spares 2 years	US$ M	3.5	0.0	1.8	0.0	0.0	1.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Capitalised Operating Costs	US$ M	33.3	1.1	6.7	22.5	0.0	3.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SiB	US$ M	54.9	0.0	0.0	0.0	0.0	1.4	1.4	2.9	2.9	2.9	2.9	2.9	2.9	34.7
Total Contingency Capital	US$ M	23.2	2.7	8.3	1.1	0.1	2.7	8.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0
Total Capital Expenditure	US$ M	481.7	48.7	146.4	43.5	2.4	54.9	131.9	4.0	2.9	2.9	2.9	2.9	2.9	35.5
Cashflow															
Free Cashflows before Tax	US$ M	5,199.5	-48.7	-146.4	-15.1	149.8	99.9	27.9	243.6	320.2	303.8	249.3	230.1	225.3	3,559.9
Unredeemed Capital	US$ M	242.6	0.0	0.0	32.4	149.8	60.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Corporate Tax	US$ M	1,403.9	0.0	0.0	0.0	0.0	10.7	7.5	65.8	86.5	82.0	67.3	62.1	60.8	961.2
Free Cashflow After Tax	US$ M	3,795.6	-48.7	-146.4	-15.1	149.8	89.2	20.3	177.8	233.8	221.8	182.0	168.0	164.4	2,598.7
Cumulative Free Cashflow After Tax	US$ M	3,795.6	-48.7	-195.1	-210.2	-60.4	28.8	49.2	227.0	460.8	682.5	864.5	1,032.5	1,196.9	3,795.6
NPV	US$ M	1,212.3													
	IRR	41.7%													

*Values might slightly differ due to rounding. US$/AUD Exchange Rate 1/10/22

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Appendix 2: Mineral Resource and Ore Reserve Estimate

The Mineral Resource estimate is included in Section 15, and the Ore Reserve estimate is included in Section 23 of this announcement. The reader is also referred to *ASX announcement of 4 October 2022 : VR8 updates mineral resource and ore reserve statements for the Steelpoortdrift vanadium project.*

Appendix 3: JORC Table 1

Sound Mining estimated the Mineral Resource and Ore Reserve in accordance with the JORC Code (2012 Edition).

Section 1: Sampling techniques and data

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Sampling Techniques	• Nature and quality of sampling (e.g., cut channels, random chips, or specific specialised industry standard measurement tools appropriate to the minerals under investigation, such as down hole gamma sondes, or handheld XRF instruments, etc.). These examples should not be taken as limiting the broad meaning of sampling. • Include reference to measures taken to ensure sample representivity and the appropriate calibration of any measurement tools or systems used. • Aspects of the determination of mineralisation that are Material to the Public Report. • In cases where 'industry standard' work has been done this would be relatively simple (e.g., 'reverse circulation drilling was used to obtain 1m samples from which 3kg was pulverised to produce a 30g charge for fire assay'). In other cases more explanation may be required, such as where there is coarse gold that has inherent sampling problems. Unusual commodities or mineralisation types (e.g., submarine nodules) may warrant disclosure of detailed information.	• Diamond Drilling: o drillhole SPD and SFDD series diamond core drilling used BQ sized core; o drillhole VDD series diamond core drilling used NQ sized core; o sampling was done lithologically at an optimum sample length of 1m, a minimum sample length of 15cm was required for assay purposes; o the core was halved for analyses and the remaining halves were retained in stratigraphic sequence in the core trays; and o the remaining core has been photographed, and the trays stacked and stored at VR8 core shed in Steelpoort. • RC Drilling: o drillhole VRC and SFR series used 5¼ inch face sampling hammer; o RC drilling was sampled at 1m intervals; and o RC drilling split was done on site using a riffle splitter. • All aspects of the determination of mineralisation are described in this table. • The RC and diamond drilling using these methods were considered appropriate for sampling the vanadiferous titanomagnetite unit which hosts the mineralisation. • All of the drill samples taken were sent to a commercial laboratory for crushing, pulverising and chemical analysis by industry standard practices.
Drilling Techniques	• Drill type (e.g., core, reverse circulation, open-hole hammer, rotary air blast, auger, Bangka, sonic, etc.) and details (e.g., core diameter, triple or standard tube, depth of diamond tails, face-sampling bit or other type, whether core is oriented and if so, by what method, etc.).	• **Diamond Drilling:** o drillhole SFDD and SPD series diamond drilling from surface using BQ core sizes; o drillhole VDD diamond drilling used HQ and NQ2 core sizes. Coring was from surface using HQ. Core was changed to NQ2 when ground conditions were competent; and o all diamond core was stored in industry standard core trays labelled with the drillhole ID and core interval. • **RC Drilling:** o drillhole VRC and SFR series used sampling hammer and 5¼ inch bit sizes.

*Values might slightly differ due to rounding. US$/AUD Exchange Rate 1/10/22

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CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Drill Sample Recovery	• Method of recording and assessing core and chip sample recoveries and results assessed. • Measures taken to maximise sample recovery and ensure representative nature of the samples. • Whether a relationship exists between sample recovery and grade and whether sample bias may have occurred due to preferential loss/gain of fine/coarse material.	• Diamond Drilling: o the condition and qualitative estimates of DD sample recovery were determined through visual inspection and measurements of the drilling core runs and recorded at the time of recovery at the drill rig; and o hard copy and digital copy of the sampling log were maintained for data verification. • RC Drilling: o samples were weighed to give a quantitative basis to estimation of recovery; and o a consistent drilling technique was used, with cleaning of cyclone after each sample. • Diamond drill core recovery was recorded as a percentage of measured recovered cores versus drilled distance. Recoveries have been high to date. • RC drill samples were weighed to give a quantitative basis to estimation of recovery. • No relationship was observed between recovery and grade. • There is no known or reported relationship in historical drilling between sample recovery and grade.
Logging	• Whether core and chip samples have been geologically and geotechnically logged to a level of detail to support appropriate Mineral Resource estimation, mining studies and metallurgical studies. • Whether logging is qualitative or quantitative in nature. Core (or costean, channel, etc.) photography. • The total length and percentage of the relevant intersections logged.	• SFDD and SPD series holes were qualitatively logged for the total length of the hole. Logging recorded lithology, mineralogy, alteration, veining, grainsize, mineralisation and weathering. • SFR series holes (RC chips) were logged on a metre basis with an allocation of colour, grain size and rock name, to each metre. • VDD drill core and VRC RC drill chips were geologically logged for the total length of the hole. Logging recorded lithology, mineralogy, alteration, veining, structure, mineralisation and weathering. Logs were coded using the company geological coding legend and entered into Excel worksheets prior to being loaded into a database maintained by an independent consultant. All core was photographed with images stored on the company server. • Logging of chips and diamond core was both qualitative (e.g., colour) and quantitative (e.g., minerals percentages). • Logging was appropriate and sufficiently detailed to support Mineral Resource estimates. • 100% of all drilling to date by the Company has been logged. Mineralised zones were logged in detail extending into the overlying and underlying non-mineralised zones.

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Sub-sampling Techniques and Sample Preparation	• If core, whether cut or sawn and whether quarter, half or all core taken. • If non-core, whether riffled, tube sampled, rotary split, etc and whether sampled wet or dry. • For all sample types, the nature, quality and appropriateness of the sample preparation technique. • Quality control procedures adopted for all sub-sampling stages to maximise representivity of samples. • Measures taken to ensure that the sampling is representative of the in situ material collected, including for instance results for field duplicate/second-half sampling. • Whether sample sizes are appropriate to the grain size of the material being sampled.	• Sampling for all diamond core samples were undertaken on split core, halved via a core saw. • RC drilling is sampled dry and split using a riffle splitter. For the drillhole SFR series RC drill holes the entire recovered sample for each metre was collected and riffle split down to a 1kg sub sample. Samples were then combined to form 2m composites. • The sampling techniques for both diamond drilling and RC drilling are of consistent quality and appropriate. Whole samples were delivered to the lab, where sample preparation was done according to industry standards • To ensure representivity, core was taken from the same side of the hole each time. Cutting and splitting of samples were done to ensure the sample integrity remains the same. Cutting first taking place along the length of the core on the marked orientation line. The retention / reference core was placed back in the core tray, with all sampling and meter marking details reapplied to the reference core on the cut surface. The core that was to be sent for sampling was then cut on the white sample marks (start and end marks for sampling), but the cutting was only done halfway through the core and the core then physically broken further. • For the RC drilling, the entire metre of sample was collected and split on site with a riffle splitter. Each sample was fed progressively from the cyclone into a transparent tube ("sausage" bag) in a manner that ensured that very little mixing occurred between material derived from adjacent depths. The sample "sausages" was packed next to the rig in metre sequences and labelled using permanent black markers, indicating the drillhole number and the "from" and "to" for each bag. • To ensure representativity, sampling followed the same methodology at all times, with field duplicates taken and inserted into the sample stream. Certified Reference Materials (**CRMs**) were selected to be similar in chemistry to the mineralisation being targeted. • One field duplicate was collected per twenty samples in addition to laboratory duplicates which were also reported. • The material and sample sizes were considered appropriate given the unit being sampled.
Quality of Assay Data and Laboratory Tests	• The nature, quality and appropriateness of the assaying and laboratory procedures used and whether the technique is considered partial or total. • For geophysical tools, spectrometers, handheld XRF instruments, etc, the parameters used in determining the analysis including instrument make and model, reading times, calibrations factors applied and their derivation, etc. • Nature of quality control procedures adopted (e.g., standards, blanks, duplicates, external laboratory checks) and whether acceptable levels of accuracy (i.e., lack of bias) and precision have been established.	• The samples were sent to ALS Johannesburg, an ISO accredited commercial laboratory, for preparation and whole rock analysis. All samples were analysed by XRF fusion for Al_2O_3, As, Ba, CaO, Cl, Co, Cr_2O_3, Cu, Fe, K_2O, MgO, Mn, Na_2O, Ni, P, Pb, S, SiO_2, Sn, Sr, TiO_2, V, Zn and Zr as well as loss on ignition. • Davis Tube analysis was carried out by SGS Laboratories, Johannesburg, an ISO accredited commercial laboratory. Davis Tube analysis carried out at magnetic field of 1,000g with magnetic and non-magnetic fractions analysed by XRF fusion for Fe, TiO_2, V_2O_5, P_2O_5, SiO_2, Al_2O_3, CaO, Cr_2O_3, MgO, MnO, Na_2O, K_2O and loss on ignition. • Handheld assay devices have not been reported. Handheld magnetic susceptity readings were used to ensure the complete possible mineralised zones were sampled. • QA/QC samples were inserted every ten samples. These alternate between a CRM and blank, and a field duplicate. • CRMs were sourced from an accredited source and are of similar material to the mineralisation being sampled. • QA/QC samples were checked following receipt of each assay batch to confirm acceptable accuracy and precision.

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CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Verification of Sampling and Assaying	• The verification of significant intersections by either independent or alternative company personnel. • The use of twinned holes. • Documentation of primary data, data entry procedures, data verification, data storage (physical and electronic) protocols. • Discuss any adjustment to assay data.	• Assay results and intersections have been reviewed by independent geological consultants and by Sound Mining's CP, Sara Turnbull. • Assay results were checked and verified against the lithological logs and any anomalous values were verified by the onsite geologists. • A third-party twinned two drill holes, namely VDD044 and VDD040 with VRC060 and VRC062, however, VR8 plans to have twinned holes included in their future drilling programme. • Primary data was collected in the field and entered into Excel worksheets prior to being loaded into a database managed by an independent consultant. • Analytical results for V were converted to V_2O_5 by multiplying by 1.785.
Location of Data Points	• Accuracy and quality of surveys used to locate drill holes (collar and down-hole surveys), trenches, mine workings and other locations used in Mineral Resource estimation. • Specification of the grid system used. • Quality and adequacy of topographic control.	• Location data was recorded by handheld Garmin GPS (±7m accuracy on easting and northing) and checked by a licenced surveyor. • Drillhole deviation for drilling was measured via in-rod surveys during drilling. • The grid system for the SPD Project is UTM Zone 35 S (WGS 84 Datum). • Topographic control was good and was based on recent unmanned aerial vehicle (UAV) and heliborne surveys.
Data Spacing and Distribution	• Data spacing for reporting of Exploration Results. • Whether the data spacing and distribution is sufficient to establish the degree of geological and grade continuity appropriate for the Mineral Resource and Ore Reserve estimation procedure(s) and classifications applied. • Whether sample compositing has been applied.	• Drilling to date over the SPD Project was on approximately 150m to 300m centres east-west and 300m to 450m centres north-south over the mineralised body. • Data spacing was deemed sufficient to establish geological and grade continuity to establish a Mineral Resource estimate. • The classification of the Mineral Resource considered the search passes for grade interpolation and taking cognisance of the historical data, for which no QA/QC data was available for review. This classification criteria are as follows: o Measured Mineral Resources assigned to search pass 1; o Indicated Mineral Resources assigned to search pass 2 and only within the search pass intersecting the most recent drilling data for which QA/QC data is available; o Inferred Mineral Resources assigned to search pass 3 and only within the search pass intersecting the most recent drilling data for which QA/QC data is available; and o the remainder of the deposit is unclassified. • An analysis of the sample lengths indicates an average sample length of 0.96m. This is primarily driven by the RC drilling and sampling. An analysis of the diamond drill hole sampling indicates an average sample length of 0.84m, as such samples were composited to 1m intervals prior to statistical analysis.
Orientation of Data in Relation to Geological Structure	• Whether the orientation of sampling achieves unbiased sampling of possible structures and the extent to which this is known, considering the deposit type. • If the relationship between the drilling orientation and the orientation of key mineralised structures is considered to have introduced a sampling bias, this should be assessed and reported if material.	• The majority of the drilling at the SPD Project was inclined to the north-east which is considered appropriate given the regional and local geological stratigraphy. • To date, orientation of the mineralised domain was favourable for perpendicular drilling and sample widths were not considered to have added a significant sampling bias.
Sample Security	• The measures taken to ensure sample security.	• Samples were stored at a secure yard. Samples were then delivered to the assay laboratory in Johannesburg by representatives of the Company.
Audits or Reviews	• The results of any audits or reviews of sampling techniques and data.	• No independent audits have been undertaken.

Section 2: Reporting of exploration results

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Mineral Tenement and Land Tenure Status	• Type, reference name/number, location and ownership including agreements or material issues with third parties such as joint ventures, partnerships, overriding royalties, native title interests, historical sites, wilderness or national park and environmental settings. • The security of the tenure held at the time of reporting along with any known impediments to obtaining a licence to operate in the area.	• The SPD Project comprises a Mining Right covering the farm Steelpoortdrift 365 KT. • The tenure is in good standing. • The Company is not aware of any impediments relating to the licence or the area.
Exploration Done by Other Parties	• Acknowledgment and appraisal of exploration by other parties.	• The Project has previously been explored for magnetite-hosted Fe-V-Ti deposits.
Geology	• Deposit type, geological setting and style of mineralisation.	• The SPD Project is located within the Eastern Limb of the of the Bushveld Complex (**BC**) close to the contact between the Upper Zone and Main Zone, adjacent to the Steelpoort Fault. • The BC is a saucer-shaped, layered igneous intrusion emplaced as multiple injections or pulses of sulphide rich magma. Vanadium mineralisation occurs within four vanadium-bearing titano-magnetite-rich layers which are located at the base of the Upper Zone of the Rustenburg Layered Suite.
Drill Hole Information	• A summary of all information material to the understanding of the exploration results including a tabulation of the following information for all Material drill holes: o easting and northing of the drill hole collar o elevation or RL (Reduced Level – elevation above sea level in metres) of the drill hole collar o dip and azimuth of the hole o down hole length and interception depth o hole length. • If the exclusion of this information is justified on the basis that the information is not Material and this exclusion does not detract from the understanding of the report, the Competent Person should clearly explain why this is the case.	• All drill hole information is available in previous ASX:VR8 announcements (12 October 2018, 25 October 2018, 28 November 2018, 16 January 2019, 14 February 2019 and 27 March 2019) and no new results were used in the Mineral Resource Estimation. • All information was included where applicable.
Data Aggregation Methods	• In reporting Exploration Results, weighting averaging techniques, maximum and/or minimum grade truncations (e.g., cutting of high grades) and cut-off grades are usually Material and should be stated. • Where aggregate intercepts incorporate short lengths of high grade results and longer lengths of low grade results, the procedure used for such aggregation should be stated and some typical examples of such aggregations should be shown in detail. • The assumptions used for any reporting of metal equivalent values should be clearly stated.	• All results > 0.5% V_2O_5 have been averaged weighted by downhole length, and inclusive of a maximum of 2m internal waste. Davis Tube results were reported for the same intervals as the whole rock analysis. • High grade intervals > 1% V_2O_5 and 1.5% V_2O_5 have also been reported. No internal waste was used for the high-grade intervals. • No metal equivalent values were used for reporting exploration results.

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CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Relationship between Mineralisation Widths and Intercept Lengths	• These relationships are particularly important in the reporting of Exploration Results. • If the geometry of the mineralisation with respect to the drill hole angle is known, its nature should be reported. • If it is not known and only the down hole lengths are reported, there should be a clear statement to this effect (e.g., 'down hole length, true width not known').	• Downhole lengths were reported, and no true widths are known at this time.
Diagrams	• Appropriate maps and sections (with scales) and tabulations of intercepts should be included for any significant discovery being reported These should include, but not be limited to a plan view of drill hole collar locations and appropriate sectional views.	• Appropriate diagrams have been shown in the text.
Balanced Reporting	• Where comprehensive reporting of all Exploration Results is not practicable, representative reporting of both low and high grades and/or widths should be practiced to avoid misleading reporting of Exploration Results.	• All results are included in exploration reporting.
Other Substantive Exploration Data	• Other exploration data, if meaningful and material, should be reported including (but not limited to): geological observations; geophysical survey results; geochemical survey results; bulk samples – size and method of treatment; metallurgical test results; bulk density, groundwater, geotechnical and rock characteristics; potential deleterious or contaminating substances.	• All current exploration data was derived from diamond drill and RC drilling samples. Previous ASX Announcements have detailed other exploration including magnetic surveys, surface sampling result, drilling results (whole rock and Davis Tube), metallurgical test results.
Further Work	• The nature and scale of planned further work (e.g., tests for lateral extensions or depth extensions or large-scale step-out drilling). • Diagrams clearly highlighting the areas of possible extensions, including the main geological interpretations and future drilling areas, provided this information is not commercially sensitive.	• Further work should include bulk sample testing and the logging and potential analyses from a geotechnical investigation.

Section 3: Estimation and reporting of Mineral Resources

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Database Integrity	• Measures taken to ensure that data has not been corrupted by, for example, transcription or keying errors, between its initial collection and its use for Mineral Resource estimation purposes. • Data validation procedures used.	• The database is managed by an external, independent database consultant. Data imported to the database goes through a series of visual and database routine validations before being accepted. Assay results were also compared to the recorded lithologies. Exports from this database were used for the Mineral Resource estimation. • Following importation into the modelling software, data undergoes validation by the software's inbuilt validation tools followed by manual validation and checks by the competent person

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CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Site Visits	• Comment on any site visits undertaken by the Competent Person and the outcome of those visits. • If no site visits have been undertaken indicate why this is the case.	• The Sound Mining's CPs conducted two site visits during March 2022 primarily to oversee the drilling of ten drill holes for geotechnical investigation. The core shed, the proposed access sites, infrastructure, open pit sites and process plant sites were also visited during this time. It is noted that due to the drilling being specifically for geotechnical assessment, no assay sampling has been conducted as of the effective date of the Mineral Resource Statement. • Spot checks were conducted on the lithological logging procedures practiced during the 2022 geotechnical drilling. Drill core, chip logging and sampling procedures from the previous drilling campaigns were inspected. No significant data or procedural issues were noted during the CP's site visits. The CP was able to view and verify a number of drill hole collar locations, geological outcrops of mineralisation and the basement anorthosite. • Gemecs is responsible for the overall geological database and signing-off on sampling activities and verification of assay results and database management. • The Competent Person for the Mineral Resource completed a site visit in March 2022 prior to initiating the MRE. • Personnel who supervised the sampling of the 2010 drilling programme and the estimation of the previous SAMREC Resource were on site during the 2018 drilling campaign and have verified there is no new or material data that would have an adverse effect on the acceptance of the historical drilling, modelling and interpreted geology.
Geological Interpretation	• Confidence in (or conversely, the uncertainty of) the geological interpretation of the mineral deposit. • Nature of the data used and of any assumptions made. • The effect, if any, of alternative interpretations on Mineral Resource estimation. • The use of geology in guiding and controlling Mineral Resource estimation. • The factors affecting continuity both of grade and geology.	• The confidence in the geological interpretation is considered to be moderate to high. The geological setting is well known and documented in the literature. Local geologists very familiar and experienced in the BC geology have performed the logging and sampling activities. • A geological model was established based on historical and follow-up surface mapping and drilling results. • Results from additional drilling will improve the detail of the sub surface geology.
Dimensions	• The extent and variability of the Mineral Resource expressed as length (along strike or otherwise), plan width, and depth below surface to the upper and lower limits of the Mineral Resource.	• The UMZ and LMZ have been mapped along strike (NW-SE) for approximately 4km and intersected in drilling for approximately 1.7km to the SW (distance from outcrop to furthest drilling. • The thickness of the layers is shown by the assay results released by the Company and ranges from 5m to 37m (not true thickness).

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CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Estimation and Modelling Techniques	• The nature and appropriateness of the estimation technique(s) applied and key assumptions, including treatment of extreme grade values, domaining, interpolation parameters and maximum distance of extrapolation from data points. If a computer assisted estimation method was chosen include a description of computer software and parameters used. • The availability of check estimates, previous estimates and/or mine production records and whether the Mineral Resource estimate takes appropriate account of such data. • The assumptions made regarding recovery of by-products. • Estimation of deleterious elements or other non-grade variables of economic significance (e.g., sulphur for acid mine drainage characterisation). • In the case of block model interpolation, the block size in relation to the average sample spacing and the search employed. • Any assumptions behind modelling of selective mining units. • Any assumptions about correlation between variables. • Description of how the geological interpretation was used to control the resource estimates. • Discussion of basis for using or not using grade cutting or capping. • The process of validation, the checking process used, the comparison of model data to drill hole data, and use of reconciliation data if available.	• Interpolation of V_2O_5 grade was undertaken using Micromine software. Statistical investigations were completed on the captured estimation data set, composited to 1m intervals. • No extreme grades or magnetite contents were observed and therefore no top cuts were required. • The previous JORC compliant Mineral Resource Estimate was documented in the ASX Announcement of 28 April 2020 contained material classified as Measured, Indicated and Inferred, the 16 April 2019 Resource contained material classified as Indicated and Inferred. A previous JORC compliant Mineral Resource Estimate was documented in the ASX Announcement of 18 December 2018 and contained material wholly classified as Inferred, and prior to this a Mineral Resource was estimated under the SAMREC Code and is documented in the ASX Announcement of 22 March 2018. • Block sizes were selected with the assistance of Quantitative Kriging Neighbourhood Analysis and consideration of drillhole spacing. • No assumption of mining selectivity was incorporated into the Mineral Resource estimate, although minimum grade cut-off was used to determine and report the Mineral Resource. • Visual validation was completed and shows reasonable correlation between estimated grades and drill sample grades. • No cutting or capping was applied after the statistical review of the V_2O_5 distribution, this showed no significant outliers. • No reconciliation data is available as no mining has taken place.
Moisture	• Whether the tonnages are estimated on a dry basis or with natural moisture, and the method of determination of the moisture content.	• Quantities were estimated on a dry in situ basis. No moisture values were reviewed, as moisture is not relevant in the geological setting.
Cut-off Parameters	• The basis of the adopted cut-off grade(s) or quality parameters applied.	• The cut-off grade was based on likely economic concentrations of V_2O_5 based on the review of similar projects. Mining studies should be carried out to determine a more precise cut-off grade and marketing studies should be used to refine this based on the economic value of other metals (or presence of deleterious elements).
Mining Factors or Assumptions	• Assumptions made regarding possible mining methods, minimum mining dimensions and internal (or, if applicable, external) mining dilution. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential mining methods, but the assumptions made regarding mining methods and parameters when estimating Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the mining assumptions made.	• The Mineral Resource model assumes open pit mining should be undertaken and a reasonable level of mining selectivity should be achieved. It has been assumed that grade control should be applied to ore/waste delineation processes.

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CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Metallurgical Factors or Assumptions	• The basis for assumptions or predictions regarding metallurgical amenability. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider potential metallurgical methods, but the assumptions regarding metallurgical treatment processes and parameters made when reporting Mineral Resources may not always be rigorous. Where this is the case, this should be reported with an explanation of the basis of the metallurgical assumptions made.	• Metallurgical test work results were reported in an ASX Announcement dated 22 June 2021 and 18 March 2019. • Where required, area analogues (e.g., Rhovan, Mapochs, Vametco) were used to determine the prospects of eventual economic extraction.
Environmental Factors or Assumptions	• Assumptions made regarding possible waste and process residue disposal options. It is always necessary as part of the process of determining reasonable prospects for eventual economic extraction to consider the potential environmental impacts of the mining and processing operation. While at this stage the determination of potential environmental impacts, particularly for a greenfields project, may not always be well advanced, the status of early consideration of these potential environmental impacts should be reported. Where these aspects have not been considered this should be reported with an explanation of the environmental assumptions made.	• No assumptions were made regarding environmental factors. The Company should work to mitigate the environmental impact as a result of any future mining or mineral processing. • The mining residue stockpiles should be covered in the Integrated Environmental Authorisation and should be stored back in the mined area so as to keep the footprint as small as possible. • The tailings should be stored in an authorised tailings storage facility with the correct lining and dirty water dams.
Bulk Density	• Whether assumed or determined. If assumed, the basis for the assumptions. If determined, the method used, whether wet or dry, the frequency of the measurements, the nature, size and representativeness of the samples. • The bulk density for bulk material must have been measured by methods that adequately account for void spaces (vugs, porosity, etc.), moisture and differences between rock and alteration zones within the deposit. • Discuss assumptions for bulk density estimates used in the evaluation process of the different materials.	• Density measurements were completed on RC drill chips (using a pycnometer) from the 2018 and historical drilling. • Block values for Bulk Density were calculated using the high correlation and density value. This level of precision is deemed appropriate for a Mineral Resource at a Measured level of confidence.

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<table>
<tr><th>CRITERIA</th><th>JORC CODE EXPLANATION</th><th>COMMENTARY</th></tr>
<tr><td>Classification</td><td>The basis for the classification of the Mineral Resources into varying confidence categories.
Whether appropriate account has been taken of all relevant factors (i.e., relative confidence in tonnage/grade estimations, reliability of input data, confidence in continuity of geology and metal values, quality, quantity and distribution of the data).
Whether the result appropriately reflects the Competent Person’s view of the deposit.</td><td>The Mineral Resource for the SPD Project is classified as Measured, Indicated and Inferred based on geological understanding, data quality, sample spacing and geostatistical analysis.
Quantitative Kriging Neighbourhood Analysis (QKNA) was undertaken to investigate changes with regards to block size and number of informing samples.
The slope of regression shows apposing trends when investigating the effects of a change in block size in a northerly and eastly direction. Due to the dipping nature of the deposit and the closest drill holes being approximately 80m apart, a block size of 20m-by-20m parent block size was selected.
Grades (flattened samples) were interpolated into the flattened block model using four search passes (see table below). Each search used the criteria of intersecting a minimum of two drill holes, one sample per drill hole and a maximum of 30 samples. The search ellipses were orientated according to the directions identified in the variography and the search ranges applied can be seen in the table below.
Search Ellipse Ranges
<table>
<tr><th>PARAMETER</th><th>DIRECTION AXIS 1 (m)</th><th>DIRECTION AXIS 2 (m)</th><th>Z DIRECTION AXIS (m)</th></tr>
<tr><td>Search 1</td><td>140</td><td>110</td><td>22</td></tr>
<tr><td>Search 2</td><td>280</td><td>220</td><td>22</td></tr>
<tr><td>Search 3</td><td>560</td><td>440</td><td>22</td></tr>
<tr><td>Search 4</td><td>2,000</td><td>2,000</td><td>200</td></tr>
</table>
The input data is comprehensive in its coverage of the mineralisation and does not favour or misrepresent in situ mineralisation. The definition of mineralised zones is based on a good geological understanding producing a robust model of mineralised domains. This model has been confirmed by infill and extensional drilling which supported the interpretation.
The Mineral Resource estimate appropriately reflects the view of the Competent Person, that the data quality and validation criteria, as well as the Mineral Resource methodology and check procedures, are reliable and consistent with criteria as defined by the JORC Code, 2012 Edition.</td></tr>
<tr><td>Audits or Reviews</td><td>The results of any audits or reviews of Mineral Resource estimates.</td><td>Sound Mining International SA (Proprietary) Limited has undertaken a review of the Mineral Resource.</td></tr>
<tr><td>Discussion of Relative Accuracy/ Confidence</td><td>Where appropriate a statement of the relative accuracy and confidence level in the Mineral Resource estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the resource within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors that could affect the relative accuracy and confidence of the estimate.
The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used.
These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.</td><td>The lode geometry and continuity were adequately interpreted to reflect the level of Measured, Indicated and Inferred Mineral Resources.
The data quality is good, and all drill holes have detailed logs produced by qualified geologists. A recognised laboratory was used for all analyses.
The Mineral Resource statement relates to global estimates of tonnes and grade.
The deposit is not being mined currently, nor has it ever been mined, therefore there is no reconciliation data available.</td></tr>
</table>

Section 4: Estimation and Reporting of Ore Reserve

CRITERIA	JORC CODE EXPLANATION	COMMENTARY
Mineral Resource Estimate for Conversion to Ore Reserves	• Description of the Mineral Resource estimate used as a basis for the conversion to an Ore Reserve. • Clear statement as to whether the Mineral Resources are reported additional to, or inclusive of, the Ore Reserves.	• The Mineral Resource for the Steelpoortdrift (SPD) Project as at 30 September 2022 amounts to 680Mt at 0.70% V_2O_5. They have been classified into the Measured, Indicated and Inferred categories according to requirements of JORC 2012 by the Competent Person (**CP**) responsible for the Mineral Resources, namely Ms Sara Jane Turnbull (SACNASP No.:117787) • The SPD Project is underpinned by a Mining Right awarded to Vanadium Resources (Proprietary) Limited (**VanRes**). • This Mineral Resource estimate, which is stated on a non-attributable basis, is inclusive of Ore Reserves.
Site Visits	• Comment on any site visits undertaken by the Competent Person and the outcome of those visits. • If no site visits have been undertaken indicate why this is the case.	• The Ore Reserve estimate (as at 30 September 2022) has been reviewed and signed off by Vaughn Duke (ECSA No.: 940314) as an independent Competent Person. He has visited site on 06 September 2022 and has engaged with all of the relevant engineering specialists to satisfy himself of the accuracy of the LoM designs and associated modifying factors used for the Mineral Resource to Ore Reserve conversion. The responsibility of these specialists, some of which have also visited the site, are describe below: o Sara Jane Turnbull (Independent CP and geologist) visited the site on March 2022 o Mehdi Nasiri (recognised CP and geotechnical engineer) visited the site on February 2021 and March 2022. He engaged with Martin Holland (CP and geohydrologist) to understand impact of surface and sub-surface water flow across the project. Martin visited the site on January 2022 and April 2022. o Keith Raine (recognised CP and environmental specialist) visited the site on February 2021 and March 2022. o Nicole Upton (recognised CP and environmental specialist) visited the site on April 2021. o Zohreh Fakhraei (recognised CP and mining engineer responsible for the mine design and LoM production forecast) visited the site on March 2022. o Eugene Nel (recognised CP and metallurgist) accompanied Vaughn Duke during the visit of the September 2022. o Rob Spargo (recognised CP and metallurgist) assisted Vaughn Duke in reviewing the processing designs and associated modifying factors but did not visit the site. o Vaughn Duke appraised himself of the suitability of the various sites identified for the processing and other surface infrastructures required in support of the LoM plan. He examined the location, orientation and surface expression of Mineral Resources to be exploited to confirm the relatively low strip ratio.
Study Status	• The type and level of study undertaken to enable Mineral Resources to be converted to Ore Reserves. • The Code requires that a study to at least Pre-Feasibility Study level has been undertaken to convert Mineral Resources to Ore Reserves. Such studies will have been carried out and will have determined a mine plan that is technically achievable and economically viable, and that material Modifying Factors have been considered.	• The Ore Reserve estimate is based on the DFS of the SPD Project that was completed in September 2022. It was performed to supports cost estimates to within -10% to +20%, based on Class 3 level estimates, as specified by AACE. • The CP is satisfied that the LoM plan and associated designs are technically achievable and has confirmed the economic viability of the cashflow forecast resulting from the modifying factors (see tables below) applied inclusive of input costs, metallurgical recoveries, long term Vanadium price, royalties and taxes. • Inferred Mineral Resources have not been included in the Ore Reserve Estimate.
Cut-off Parameters	• The basis of the cut-off grade(s) or quality parameters applied.	• The cut-off grade of 0.45% used for the Mineral Resource estimate has also been applied to the Ore Reserve estimate for consistency.

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<table>
<tr>
<td>Mining Factors or Assumptions</td>
<td>

The method and assumptions used as reported in the Pre-Feasibility or Feasibility Study to convert the Mineral Resource to an Ore Reserve (i.e., either by application of appropriate factors by optimisation or by preliminary or detailed design).
The choice, nature and appropriateness of the selected mining method(s) and other mining parameters including associated design issues such as pre-strip, access, etc.
The assumptions made regarding geotechnical parameters (e.g., pit slopes, stope sizes, etc.), grade control and pre-production drilling.
The major assumptions made and Mineral Resource model used for pit and stope optimisation (if appropriate).
The mining dilution factors used.
The mining recovery factors used.
Any minimum mining widths used.
The manner in which Inferred Mineral Resources are utilised in mining studies and the sensitivity of the outcome to their inclusion.
The infrastructure requirements of the selected mining methods.

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<td>

Detailed technical studies in support of the modifying factors, pit optimisations and a mine design have been performed as part of the DFS. A Low Environmental Impact Inclusion Zone was provided for the pit optimisation exercise. This Inclusion Zone takes the environmental and social aspects of the SPD Project area into consideration to avoid any encroachment of the mine on water courses and maintain an appropriate buffer zone between the mining area and the local community.
The geometry for stable open pit slope designs is supported by the results from suitable geotechnical study work (see table below):

<table>
<tr><th rowspan="3">DESCRIPTION</th><th colspan="4">DESIGN SECTOR</th></tr>
<tr><th colspan="2">1</th><th colspan="2">2</th></tr>
<tr><th>FRESH ROCK</th><th>WEATHERED ROCK</th><th>FRESH ROCK</th><th>WEATHERED ROCK</th></tr>
<tr><td>Face Angle (°)</td><td>88</td><td>55</td><td>88</td><td>55</td></tr>
<tr><td>Bench Height (m)</td><td>5</td><td>5</td><td>5</td><td>5</td></tr>
<tr><td>Spill Berm Width (m)</td><td>2</td><td>3</td><td>3</td><td>3</td></tr>
<tr><td>Number of Benches in Stack</td><td>6</td><td>6</td><td>6</td><td>6</td></tr>
<tr><td>Inter Ramp Angle (°)</td><td>69.8</td><td>39.8</td><td>61.9</td><td>39.8</td></tr>
<tr><td>Cath Berm Width (m)</td><td>8</td><td>10</td><td>10</td><td>10</td></tr>
</table>

The CP following appropriate investigation is satisfied with the choice of mining method (i.e., conventional open pit mining) and technical and financial parameters applied in the LoM (see additional information in table below):

<table>
<tr><th colspan="2">MODIFYING FACTORS</th><th>VALUE</th></tr>
<tr><td colspan="2">Calculated Mining Loss</td><td>As per Regularised Model (6.9% for entire Mineral Resource)</td></tr>
<tr><td colspan="2">Calculated Dilution</td><td>As per Regularised Model (3.2% for entire Mineral Resource)</td></tr>
<tr><td colspan="2">Geology Loss</td><td>5%</td></tr>
<tr><td colspan="2">Operational or Unplanned Mining Loss</td><td>3%</td></tr>
<tr><td colspan="2">Operational or Unplanned Dilution</td><td>3% with 0% V_2O_5 grade</td></tr>
<tr><td rowspan="3">Plant Recovery</td><td>Concentrator</td><td>98%</td></tr>
<tr><td>SRL</td><td>84.4%</td></tr>
<tr><td>Total</td><td>82.72%</td></tr>
<tr><td colspan="2">V_2O_5 Grade and Mass Yield</td><td>Included in the Mineral Resource Block Model</td></tr>
<tr><td colspan="2">Vanadium Flake Grade</td><td>98%</td></tr>
<tr><td colspan="2">Vanadium Flake Price</td><td>US$9.50/lb</td></tr>
<tr><td colspan="2">ZAR/US$ Exchange Rate</td><td>ZAR15.50/US$</td></tr>
</table>

The geological block model was regularised to accommodate a Selective Mining Unit (SMU) of five cubic metres and minimum mining width of 5m. This approach returned a calculated mining losses of 6.9% and calculated dilution of 3.2%.
An additional geological loss of 5%, Operational or Unplanned mining loss of 3% and dilution of 3% (at zero grade) are also applied in the LoM scheduling process.
Approximately 4% of the Inferred Mineral Resources are included sporadically in the LoM production schedule between Year 5 and

</td>
</tr>
</table>

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CRITERIA	JORC CODE EXPLANATION	COMMENTARY
		Year 21. These are not included in the Ore Reserve Estimate and they are not materially impact the economic viability of the Ore Reserves. • Suitable infer structure has been designed as part of the DFS including, processing facilities, conveyors, workshops, administration buildings, haul roads, waste dump and Tailings Storage Facilities (**TSF**). The backfilling of tailings into mined out areas of the open pit has been included in LoM plan and scheduling to reduce the size of the TSF required.
Metallurgical Factors or Assumptions	• The metallurgical process proposed and the appropriateness of that process to the style of mineralisation. • Whether the metallurgical process is well-tested technology or novel in nature. • The nature, amount and representativeness of metallurgical test work undertaken, the nature of the metallurgical domaining applied and the corresponding metallurgical recovery factors applied. • Any assumptions or allowances made for deleterious elements. • The existence of any bulk sample or pilot scale test work and the degree to which such samples are considered representative of the orebody as a whole. • For minerals that are defined by a specification, has the Ore Reserve estimation been based on the appropriate mineralogy to meet the specifications?	• The metallurgical process reported in the DFS relies on conventional crushing, grinding and magnetic separation techniques to produce a vanadium concentrate. This concentrate will then be roasted in the presence of salt to form water-soluble sodium metavanadate, from which vanadium pentoxide can be extracted. These methods are considered appropriate for the product specification and applied elsewhere in South Africa and globally. • The results of metallurgical test work from bulk sampling and full core samples from wide diameter core drilling have been reported in ASX Announcements dated 24 June 2020, 24 July 2020 and 22 June 2022. The study work was based on these results.
Environmental	• The status of studies of potential environmental impacts of the mining and processing operation. Details of waste rock characterisation and the consideration of potential sites, status of design options considered and, where applicable, the status of approvals for process residue storage and waste dumps should be reported.	• The SPD project has an approved Environmental Management Plan and VanRes will be applying for an Integrated Environmental Authorisation (IEA), in terms of the National Environmental Management Act (**NEMA**) and the National Environmental Management: Waste Act (**NEM:WA**), to accommodate the latest layouts and designs resulting from the DFS. • VanRes is compliant with all the environmental obligations and is applying for an Integrated Water Use License (**IWUL**). • The operation has been planned to have a minimal impact on the surrounding communities. A number of buildings will need to be moved and the rezoning of certain areas is already in progress.
Infrastructure	• The existence of appropriate infrastructure: availability of land for plant development, power, water, transportation (particularly for bulk commodities), labour, accommodation; or the ease with which the infrastructure can be provided, or accessed.	• The SPD Project is within a Special Economic Zone (**SEZ**) around Steelpoort. The area is well endowed with bulk services and supporting industrial works. • The close proximity of national roads, rail heads, dams and the national power grid reduces the initial capital required for production to commence. The plan is for vanadium concentrate to be hauled by road from the Concentrator Plant to the SRL Plant for final processing and Tarred roads already exist. • Suitable skills will be sourced from the local community to support the mining, processing, engineering and administrative function where appropriate. • An option agreement (as described in the 19 August 2022 ASX announcement) to acquire 135ha for the SRL plant has been secured.

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Costs	• The derivation of, or assumptions made, regarding projected capital costs in the study. • The methodology used to estimate operating costs. • Allowances made for the content of deleterious elements. • The source of exchange rates used in the study. • Derivation of transportation charges. • The basis for forecasting or source of treatment and refining charges, penalties for failure to meet specification, etc. • The allowances made for royalties payable, both Government and private.	• The capital cost estimate has been developed on the back of detailed designs with appropriate work break down structures and detailed Mechanical Equipment List to facilitate accurate calculations. • The mining capital requirement has been aligned with quotes received from an open pit mining contractor. • The capital expenditure for the SRL Plant was based on quotations received from original equipment manufacturers (**OEMs**) for supply of key equipment, with costs for installation, electrical, piping, pipework, structural steel and other plant construction items based on costs at similar operations in South Africa. • The environmental liability and ongoing rehabilitation cost estimates are based on the independent environmental study. • The capital expenditure forecast is driven by the production and operational readiness planning with cognisance taken of long lead item. • The operating cost estimates rely on a combination of techniques, including zero based cost modelling from first principles, quotations from contractors and benchmarking against similar activities in the South African mining industry. • The operating cost forecast is driven by the production profile and variable operating cost component. • The fixed cost component of the processing contribution of about 60%, increased by approximately 70% with the introduction of the Phase 2 processing enhancements. The transport charge for concentrate to the SRL is based on quotations received for the purpose, and for the delivery of product to port is dictated by an associate expression of interest to enter into an off-take agreement. • The cost estimates have been determined in US$ and when necessary, an exchange rate of ZAR15.50/US$ has been applied. This exchange rate is consistence with the long-term view of most operations in the South African mining industry. An overall accuracy level of +/-10% has been targeted. • Royalties are based on the formula as defined in the South African Royalties Act (2010) linked to the Minerals and Petroleum Resources Development Act (**MPRDA 2002**). The royalties over the LoM were calculated at an average of 4.9%. The related commodity price assumptions are discussed in "Revenue Factors" below.
Revenue Factors	• The derivation of, or assumptions made regarding revenue factors including head grade, metal or commodity price(s) exchange rates, transportation and treatment charges, penalties, net smelter returns, etc. • The derivation of assumptions made of metal or commodity price(s), for the principal metals, minerals and co-products.	• The revenue forecast is a function of the production schedule from the LoM plan, assumed price of US$9.50/lb for the vanadium flake (V_2O_5> 98%) product, processing recovery assumptions, marketing costs and royalty obligations. • The product price was determined on the back of a marketing analysis commissioned for the DFS. • The processing recoveries are based on metallurgical test work and the marketing costs have been informed by the envisioned offtake agreement mentioned above. The CP has not had sight of this expression of interest on the basis that it is a confidential document.
Market Assessment	• The demand, supply and stock situation for the particular commodity, consumption trends and factors likely to affect supply and demand into the future. • A customer and competitor analysis along with the identification of likely market windows for the product. • Price and volume forecasts and the basis for these forecasts. • For industrial minerals the customer specification, testing and acceptance requirements prior to a supply contract.	• VanRes commissioned Deloitte Technical Mining Advisory of Deloitte Touche Tohmatsu Limited (**Deloitte**) to carry out an independent assessment of the vanadium market for the DFS. • It reports a vanadium supply deficit over the short to medium term going forward despite other entrance into the vanadium market, and VanRes is already engaging with numerous potential customers. • The product to be sold (i.e., vanadium flake, V_2O_5> 98%) is a standard industry specification targeted by the DFS work and associated mining plan.

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Economic	• The inputs to the economic analysis to produce the net present value (NPV) in the study, the source and confidence of these economic inputs including estimated inflation, discount rate, etc. • NPV ranges and sensitivity to variations in the significant assumptions and inputs.	• The inputs to the discounted cashflow model are tabulated in the body of the DFS. • The economic viability of the Ore Reserves (and SPD Project) has been established by using a Discounted Cash Flow (**DCF**) modelling technique, which relies on the revenue and costs forecasts from the DFS to compute an overall cashflow forecast on an annual basis. • The royalties were calculated using a formula applicable to refined minerals and the South African corporate tax rate of 27% was applied. • The overall cashflow forecast was then discounted using a real discount rate of 7.5% to determine the economics of the planned operation (i.e., escalation is not applied). • The results confirm that the Ore Reserves are economically viable, and a sensitivity analysis demonstrates that the overall cashflow forecast remains robust despite a 20% drop in revenue being the most sensitive to change.
Social	• The status of agreements with key stakeholders and matters leading to social licence to operate.	• VanRes have an approved Social and Labour Plan (**SLP**) which is linked to the mining right. • Amendments to this SLP will now be required as a consequence of new designs and updated planning in the DFS that underpins the Ore Reserve Estimate. • These amendments are expected to be completed during calendar year 2023.
Other	• To the extent relevant, the impact of the following on the project and/or on the estimation and classification of the Ore Reserves: o Any identified material naturally occurring risks. o The status of material legal agreements and marketing arrangements. o The status of governmental agreements and approvals critical to the viability of the project, such as mineral tenement status, and government and statutory approvals. There must be reasonable grounds to expect that all necessary Government approvals will be received within the timeframes anticipated in the Pre-Feasibility or Feasibility study. Highlight and discuss the materiality of any unresolved matter that is dependent on a third party on which extraction of the reserve is contingent.	• A comprehensive risk assessment exercise was undertaken as part of the DFS with the CP in attendance and no fatal flaws were identified during the process. • The Mining Right associated with the Ore Reserve estimate is current and valid. • All material legal agreements are current and active. • Despite the receipt of expressions of interest, binding offtake agreements are not in place at this stage. • The applications submitted for a water use license and for re-zoning are not expected to adversely impact the timelines assumed in the DFS.
Classification	• The basis for the classification of the Ore Reserves into varying confidence categories. • Whether the result appropriately reflects the Competent Person's view of the deposit. • The proportion of Probable Ore Reserves that have been derived from Measured Mineral Resources (if any).	• The Measured and Indicated Resources scheduled for depletion and processing from within the open pit design have been converted to Proved and Probable Ore Reserves, respectively. • The CP is satisfied with the materiality of the Ore Reserve and appropriateness of their categorisation.
Audits or Reviews	• The results of any audits or reviews of Ore Reserve estimates.	• No audits or reviews of Ore Reserve estimates have been conducted.

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Discussion of Relative Accuracy/ Confidence	• Where appropriate a statement of the relative accuracy and confidence level in the Ore Reserve estimate using an approach or procedure deemed appropriate by the Competent Person. For example, the application of statistical or geostatistical procedures to quantify the relative accuracy of the reserve within stated confidence limits, or, if such an approach is not deemed appropriate, a qualitative discussion of the factors which could affect the relative accuracy and confidence of the estimate. • The statement should specify whether it relates to global or local estimates, and, if local, state the relevant tonnages, which should be relevant to technical and economic evaluation. Documentation should include assumptions made and the procedures used. • Accuracy and confidence discussions should extend to specific discussions of any applied Modifying Factors that may have a material impact on Ore Reserve viability, or for which there are remaining areas of uncertainty at the current study stage. • It is recognised that this may not be possible or appropriate in all circumstances. These statements of relative accuracy and confidence of the estimate should be compared with production data, where available.	• The Ore Reserve was estimated from the Mineral Resource after consideration of the level of confidence in the Mineral Resource and taking account of material and relevant modifying factors including mining, processing, infrastructure, environmental, legal, social and commercial factors. • The Probable Ore Reserve estimate has been based on the amount of Ore Reserve material within the pit design which is associated with the Indicated and Measured Mineral Resource. • No Inferred Mineral Resource was included in the Ore Reserve. The Ore Reserve represents the economically mineable part of the Measured and Indicated Mineral Resources over a period of 25 years. • The proposed mine and mineral beneficiation planning through to a final vanadium pentoxide flake product is considered by the Competent Person to be technically achievable. • The key factors that are likely to affect the accuracy and confidence in the Ore Reserves are: o Changes in vanadium pentoxide flake prices. o Changes in anticipated metallurgical recoveries.

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